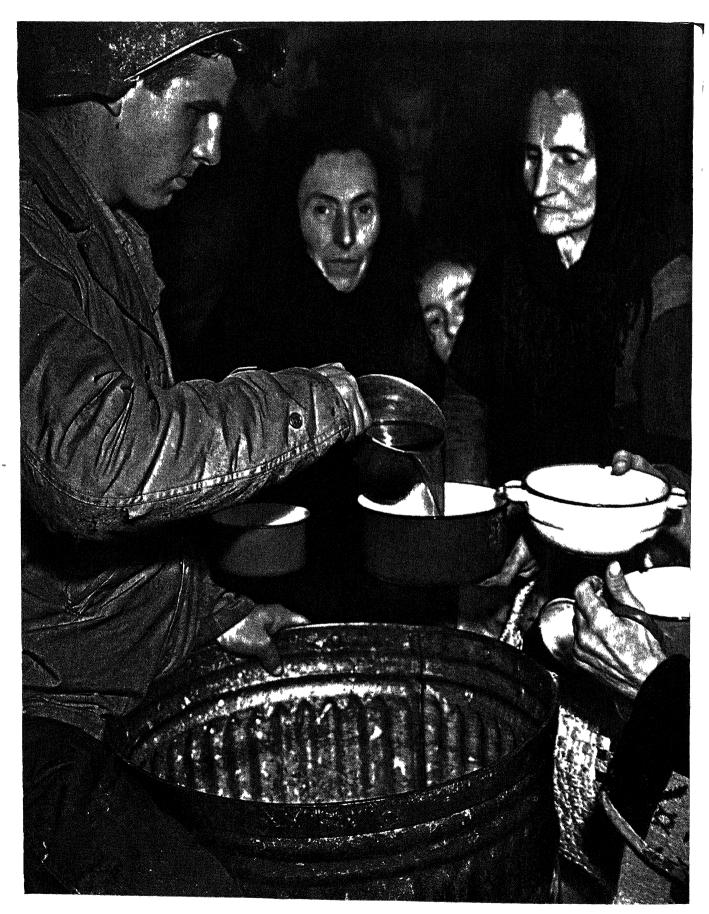
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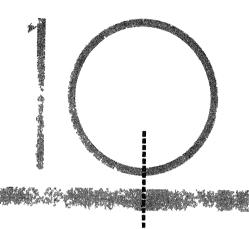
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Italy, 1944



Eventful Years

VOLUME TWO
CONCENTRATION
CAMPS to LEY

A RECORD OF EVENTS
OF THE YEARS PRECEDING
INCLUDING AND FOLLOWING
WORLD WAR II

1937 THROUGH 1946

Prepared Under the Editorial Direction of WALTER YUST

Editor of Encyclopædia Britannica



The University of Chicago

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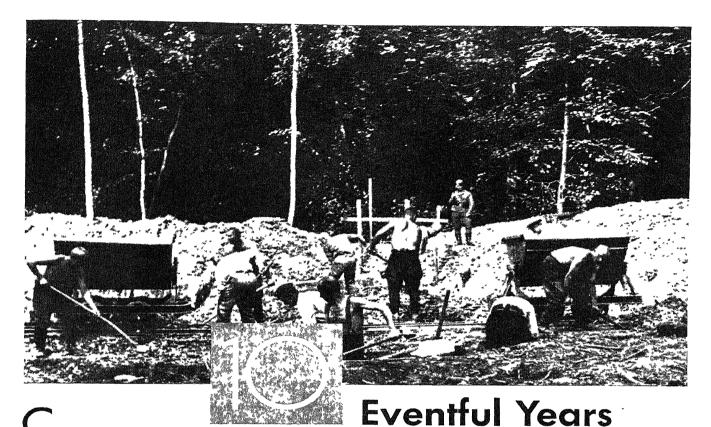
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oncentration Camps, German

Prior to 1933 concentration camps had never been deliberately employed by a government to intimidate its own subjects. National socialism was the first totalitarian regime to use them as a major instrument for establishing control and for insuring its continuation in power. Because the camps were new inventions of the regime, no rules or regulations inherited from the German republic interfered with their organization. Moreover, they were relatively separated from the rest of German life and hence no interference from the population at large exercised its mitigating influence.¹

As central institutions of the government, their history followed closely that of the national socialistic state, and the changes they underwent reflected developments in the dictatorship itself. Whenever the regime felt threatened, the tool safeguarding it was used more viciously. As the regime expanded and encompassed all of Germany's life, the concentration camps increased also in size and purpose. They were then used for purposes not contemplated when first established. As time passed, the old types of concentration camps could no longer fulfil the various purposes assigned to them, and new types were developed. During the regime's decline, the camps reflected the disintegration and chaos of a regime which was no longer able to control even its central institutions of power.

At least three factors combined in influencing the history of the concentration camp: the history of the regime itself and the various needs it tried to meet by means of the concentration camps; the independent development of the concentration camps as institutions which followed a

logic inherent in the institutions as such, and, finally the counteractions of the prisoners.

Legally, the creation of the concentration camps was indirectly based on the German constitution, which in its article 48, sub 2, gave the president far-reaching emergency powers. These were used by Paul von Hindenburg in 1933 to promulgate a law whose purpose supposedly was to protect the state's security. On the basis of this law, legal grounds for the camps were introduced into the rules governing protective custody in a circular from the ministry of the interior of April 12, 1934. This circular decreed that persons sent to a concentration camp came under the jurisdiction of the gestapo and that their release was at its discretion. Later, courts decided that such prisoners had no access to courts.

The administration of the law for protecting people and state was entrusted to the secret state police, Geheime Staats Polizei, whose name was shortened to the use of the first two letters of each word and became known as the gestapo. The gestapo was not obliged to give public account of its activities, nor even to inform prisoners' relations as to whether their kin were still alive. It was staffed by the most trusted and fanatic followers of Hitler, the SS troops. Later, when the size of the SS expanded only its elite formations, the deathhead units (so called because of their insignia, a skull) administered the concentration camps.

At first only the political enemies of the regime were brought into the camps, and from among them only those who could not be prosecuted successfully in the courts of law. But soon others were included whose histories made it dangerous and therefore impossible, for the government to make public the grounds of their imprisonment.

As soon as the party was securely entrenched in power

¹This article was not intended to include in any great detail the statistics, living conditions, or over-all horror of the German concentration camp. It is, primarily, a first-hand analysis of behaviour in extreme situations created by a nation to make its citizens adopt the will of the state while continuing to believe that the state's will was, in truth, their own.—ED.

the situation changed, because then former leftwing radicals were no longer the most dangerous foes of the government. In 1934, the radical element within the party, including followers of Ernst Roehm, became the first party members to enter the concentration camps which some of them had helped to create.

The next group considered troublesome included those who opposed what was then the party's main task—the preparation for war. Therefore, pacifists, conscientious objectors and a so-called "work-shy" category of persons were sent to the concentration camps.

The ideology of the Germans as the superior race which became a central concept of the party, was soon reflected in the constituency of the camps. Persons who had sexual relations with members of the so-called non-Aryan race were either prosecuted in the courts or sent to the concentration camps. Later, when the party decided to prosecute them, homosexual prisoners were added since these persons had all committed so-called racial crimes, and were considered race-polluters.

In addition, defection and disobedience among the SS and within the party was even more dangerous to the regime than opposition outside of it. Therefore, the concentration camp came into use against restive party members themselves.

In the spring of 1938, there were hardly more than 50,000 prisoners in all German concentration camps; their number was probably smaller. At that time, the main camps were: Sachsenhausen (c. 8,000), Dachau (c. 6,000), Buchenwald (just started, c. 2,000), Esterwegen (c. 3,000) and small numbers in each of the several smaller camps such as Flossenberg. These figures did not represent the total number of political prisoners, because there probably were an additional 50,000 to 100,000 or more in the regular penal institutions, where they were treated pretty much as prisoners were treated in other jails. This was also true for Ravensbrueck, one of the rare concentration camps for women at that time. Most of the inmates in 1938 were political prisoners; the rest consisted of several hundred "work-shy" prisoners; a few hundred conscientious objectors, most of them Jehovah's Witnesses; not even 500 Jewish prisoners, many of them "race polluters"; a few socalled "incorrigible criminals"; and not even 100 prisoners who did not fall into any of those categories, such as former members of the French foreign legion who had returned to Germany and who were considered traitors because they had accepted service for a foreign power.

Within three months after the annexation of Austria, in 1938, the population of the concentration camp at Dachau, for example, increased from not quite 6,000 to more than 9,000. From then on, the population grew steadily at an ever-increasing rate. In obvious preparation for war, the gestapo tried to incarcerate or intimidate all those inhabitants of Germany who might become dangerous to the war efforts, which may explain why more and more Jews were brought into the camps or persecuted outside of them. Between Jan. 1938 and the beginning of World War II the population of the three biggest concentration camps, those at Dachau, Sachsenhausen and Buchenwald, increased from less than 20,000 to more than 60,000. At the same time the character of their population changed; the number of the asocial and criminal prisoners increased faster than that of political prisoners. The increase in the number of camps and their population was indicated by the fact that in 1944 it was estimated that there were approximately 100 concentration camps in

Germany with a population of from 200,000 to 350,000.

After the war began and particularly during the war, other types of concentration camps were established. First the slave-labour camps were added, with a purpose different from that of the original camps. They had to control slave labour and retain the benefit of its labour power, with the least possible expense for food, maintenance and pay.

Later, when the war was no longer going in Germany's favour, a last main type of concentration camp was created, the extermination camp. Its purpose was to dispose of prisoners in ways which would not necessarily come to the attention of the rest of the population and thus not be too upsetting to it, although such extermination on a small scale had been practised for some time.

The racial and eugenic notions of the national socialistic ideology exercised their influence on the camps as early as 1937. At that time, a few prisoners, not more than a dozen, mostly sex offenders and homosexuals, were sterilized. Later, beginning in 1940, prisoners who were incurably sick, particularly insane prisoners, were killed. Slowly then, the policy intended to improve the race was implemented in the camps by exterminating persons who were supposed to carry undesirable genes. While all exterminations were the result of racial dogmas, the use of the extermination camps on a big scale was probably not premeditated when such ideologies were first developed.

The first racial problem attacked on a large scale was that of the Jews, culminating in the large scale pogroms of 1938 and the sending of tens of thousands of Jews into the existing concentration camps. During the war, both the desire to execute the racial policy and the fear of the danger of having Jews living relatively uncontrolled in German cities spread. In preparation for the invasion of Russia, the German government was confronted with the problem of making sure that the large masses of Jews living in the annexed part of Poland and in those Russian areas which Germany planned to occupy (as well as Poles and Russians in those areas) would not constitute a possible danger to the communications between Germany and the Russian front.

Therefore, from Sept. 1939 on, a policy of decimation was inaugurated for the Jews as the enemies of the German people, for the Poles as the nation who might possibly threaten Germany's hegemony in the future, and for Russians on conquered ground. The tools used were inadequate food, hard labour, inadequate medical services and so on, but during these years actual violence was the exception.

This last step was inaugurated with the establishment of the extermination camps in 1942, starting at the time when Germany's power seemed greatest. Experiments with the gas chamber had started at the camp at Oswiccim near Cracow in Sept. 1941. Extermination was in full swing in July 1942; it was finally stopped in Sept. 1944 on orders from Berlin in the hope of thus gaining more favourable peace terms.

Each of the camps had its separate history, with better and worse periods, with emphasis on one rather than the other of the manifold purposes for which the camps were created and used by the gestapo. Thus, for instance, Buchenwald, from its founding late in 1937 until 1939, was the worst of all camps. But from 1942 until its total disintegration during 1944–45, it was one of the best. Therefore, all statements made below are only generally valid, but do not necessarily apply to each concentration camp at any particular moment of its existence.

Purposes of the Camps.—The concentration camps were

established and the acts of terror were committed in them as a means for obtaining varied results. Through their medium, the gestapo tried to change former opponents of the regime into docile subjects who would be unable to start, or to participate in, acts of resistance and would become willing to further the nazis' goals. At the same time the camps were used as experimental laboratories in which to determine how human beings might be transformed into slaves. Moreover, they could be used to ascertain what the minimal requirements were in regard to tood, shelter, clothing, hygiene and so on, required for keeping slave labourers alive and able to perform hard labour when the fear of punishment and death took the place of rewards. They were used to determine the maximum working hours per day which could be extracted, when no time was allowed for relaxation or family life. The gestapo used the camps to intimidate and to terrorize the rest of the population by letting it be known, in veiled form, what happened to those who opposed the nazi rulers. The prisoners were used as hostages for the good behaviour of their families and friends.

The camps also provided training places for the gestapo. There, the future gestapo man was to be educated to lose human feeling and kindness and become a "machine" ready to obey any orders, including the order to destroy human beings without mercy. At the same time, he could be convinced how dangerous it was to oppose the regime.

The camps were laboratories which permitted other types of experimentation with human beings which none had ever before dared to attempt. Finally, the camps were used for the destruction of at least many hundreds of thousands, if not millions of persons in line with the racial ideology of the national socialist party. This destruction was to ensure, as far as possible, that even after defeat the Germans would remain the most powerful nation in what German geopolitics called the "Heartland of Europe."

This article can not cover all these purposes and all the complex aspects of the institution which became known under the name "concentration camps." Since a selection was necessary, an effort was made to discuss in detail at least the first of the above mentioned purposes because it seemed the one aspect most likely to attain lasting importance. It was the problem of how formerly autonomous individuals could be changed into docile subjects.

Since the scientific literature on the camps was still very limited at the end of 1946, it may be mentioned how the material was collected. The author spent one year in the then two biggest German concentration camps, at Dachau and at Buchenwald. No records could be kept. The only way to collect and preserve information was to concentrate on the characteristic and otherwise outstanding phenomena and to memorize them. The prisoners were eager to talk about themselves and about what had happened in the camps. During the author's year in the camps, he worked in at least 20 different labour groups and slept in five different barracks. Thus he came to know at least 600 prisoners at Dachau and 900 at Buchenwald. Although only prisoners of the same category lived together in the barracks, they mixed at work. Thus the author was able to contact prisoners of all categories. After his release, he remained as much as possible in contact with prisoners and received several comprehensive reports on the experiences of former fellow prisoners who had spent all the time of the war at Buchenwald.

Organization of the Camps.—Within the camps, two main official hierarchies existed, that of the prisoners and that of the gestapo. Each of them was again subdivided into two subgroups, one pertaining to labour and one

to all other matters. Both hierarchies were headed by the so-called first camp commander, who was for all practical purposes the governor of the camp, and was under orders from the gestapo headquarters in Berlin. He was assisted by one or two commissioned officers, the so-called second and third camp commanders. They were the only commissioned gestapo officers in the hierarchy within the camp. Enlisted SS men were used only as guards. Although they, too, had power over the life and death of prisoners, according to regulations they had no function. Only noncommissioned officers were doing actual service within the confines of the camp.

Under the camp commanders were two otherwise fairly independent hierarchies. One was responsible for the prisoners' labour, and the SS noncommissioned officers of this hierarchy were called labour leaders; their head was the first labour leader. They were in charge of the prisoners while at work; they made out the work assignments and supervised their fulfilment. Under them was a hierarchy of prisoner foremen, called Kapos, with First Kapos at their head. They were in charge of the work details.

Another hierarchy was in charge of the prisoners while they were not at work; it was headed by the so-called rapport leader, who was in charge of counting the prisoners twice daily. Under him was a complicated gestapo hierarchy whose lowest member was the so-called block leader, a private first class or corporal who was in charge of a particular block, housing anywhere from 150 to 500, and in the last year of the war, even 1,000 prisoners. Under these gestapo noncommissioned officers was another hierarchy of prisoners, led by the so-called oldest prisoners of the camp ("oldest" was just a title attached to certain offices regardless of the time spent in the camp) who functioned as a kind of prisoners' police. Under them were the "oldest" prisoners of the barrack, followed by the "oldest" prisoners of the unit, and last and lowest, by the unit scribes.

Independent of these two hierarchies were others not subject to the orders of the camp commander but responsible to their own superior officers: they were the medical SS officers, the SS troops who guarded the prisoners and those who lived in the camp but were not under the camp commander's authority.

Thus some medical officers succeeded in protecting the prisoners once they came under their supervision in the camp hospital, even against the will of the camp commander. On the other hand, whether or not a prisoner was to be admitted to the camp hospital was up to gestapo men under the camp commander. Moreover, the medical officer was, after all, a colleague of the officers administering the camp; he lived within their circle and therefore preferred to co-operate rather than oppose. Nevertheless, the medical officers sometimes asserted their independence. For instance, on one terribly cold winter night the prisoners had to stand at attention for many hours. Many of them died of exposure, while several hundreds had their limbs frozen. At that time, the medical officer in charge of the camp insisted that the commander either shoot the prisoners or send them back to the barracks, because, as he put it, he could not be bothered the next day with hundreds of amputations, and he had neither the necessary help available to perform them, nor the quantity of bandages needed. On another occasion he insisted that the prisoners be given permission to wear mittens because several hundreds of them suffered from severe frostbite, and he felt unable or unwilling to perform all the needed amputations. The result was that those prisoners who

had money were permitted to buy mittens, at a great profit for the gestapo, who sold them to the prisoners at nearly five times their cost. On the other hand, when the medical experiments with human beings were inaugurated, the medical officers carried them out under orders from Berlin, and the camp commanders were in no position to refuse to provide the prisoners needed for such experiments.

As mentioned above, the camps also served as training grounds for future SS men. These trainees lived within the confinements of the SS camp adjacent to the prisoners' camp. They served as guards of the watchtowers and of the prisoners who worked outside of the camp. Such work details were always under the supervision of an SS labour leader, and the guards were supposedly only watching the prisoners, although they had the right to bring to the attention of the work leader those who according to their opinion did not work hard enough. Nevertheless, it was left pretty much up to the individual guard's fancy whether he wanted to torture a prisoner; if he felt like shooting one, he could always do so and claim self-defense or prevention of an escape. Besides these guards, a large number of other SS troops lived within the confinements of the SS camp who were not connected with the camp itself. They either did duty in the adjacent communities, or they were special troops stationed there, because they could draw on the slave labour of the camp for the services they needed.

Living Conditions.—The prisoners lived within an enclosure, surrounded by charged wire fences and moats, sometimes also by walls. The fences and the camp were controlled by regularly spaced watchtowers, on which machine guns and floodlights were installed. Any prisoner approaching the fence was immediately shot.

All prisoners had to wear uniforms of the type used in jails, and wore insignias, indicating the group of prisoners to which they belonged. A red triangle was worn by the political prisoners, a black triangle by those interned as asocial persons, etc. All Jews had to wear yellow triangles superimposed on other triangles indicating the subgroup among the Jews to which they belonged. In addition, each prisoner wore a sign with his prison number.

The proportion of prisoners of the various categories changed from camp to camp and from year to year. In 1944 it was estimated that at that time in all camps together the percentage of the various categories was approximately the following:

Asocial and "Work-shy"	38 %
Criminal	20 %
Political	18 %
Jehovah's Witnesses	8 %
Race Polluters	8 %
Emigrants	6 %
Homosexuals	2 %

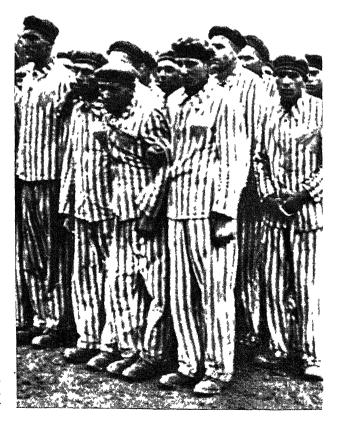
All prisoners were inadequately clothed, but nevertheless were exposed to heat, rain and freezing temperatures. Even worse, they suffered from extreme malnutrition. Before the war, the daily rations consisted of two cups of black ersatz coffee without sugar, 300 grams of low quality bread and two plates of thin vegetable soup, one at noon and one in the evening. The vegetables in this soup were mostly turnips. Occasionally the soup contained a few pieces of meat, mostly whale meat. The prisoners received, in addition, each day, one of the following: a herring, or a piece of sausage (usually prepared without meat) or two potatoes, or a piece of fatless cheese. They never received any fruit or fresh vegetables. Their

daily diet yielded less than 1,800 calories, while the labour the prisoners were forced to perform required a minimum average caloric intake of from 3,000 to 3,300 calories. An other serious hardship was the inadequacy of the water supply, which in some camps was so bad that the prisoners suffered continuously from thirst. Prisoners who had money could, up to 1939, supplement their diet by buying in the extremely expensive camp store. To be able to buy food there often meant the difference between life and death. This explains why wealthy prisoners usually were able to bribe others, and why bribery was so widespread. After 1939 the camp stores were discontinued in some but not all of the camps. Sometimes the prisoners were punished by having to go without food for a day or by being forbidden to buy at the store. During the war, this entirely insufficient diet was decreased considerably, particularly for the Jewish prisoners.

The prisoners had to perform the hardest types of labour despite suffering from malnutrition, exposure and the inability to keep themselves clean because of the lack of water and soap. Worst of all hardships was the anguish of not knowing how and when the tortures would end and of being separated from family and friends. A great additional hardship was the roll call twice daily on the parade ground during which the prisoners had to stand at attention. It sometimes lasted as long as six hours, because of the inefficiency of the gestapo men counting the prisoners and because of the continuously changing number of prisoners. In addition to all of these privations, the prisoners were denied all privacy.

It can be assumed that the death rates in the camps were set by the central office in Berlin. Sometimes gestapo headquarters ordered the governor of the camp to execute

Roll call at a German concentration camp (from a nazi photograph). Two prisoners in the foreground are supporting a comrade, as fainting was frequently an excuse for the guards to "liquidate" useless inmates



all prisoners of a certain group. At other times the governors were ordered to stop executions which had already started. When an extermination order arrived, the supervisors or even the commander of the camp frequently tried to protect certain prisoners who were important to him because of their help in running the camp. This they did by transferring them into another group, not yet selected for extermination. Thus it seemed important for a prisoner to make himself irreplaceable to the gestapo. But this also entailed its dangers. Those who knew too much were killed in time to prevent their revealing what the gestapo wanted to keep secret.

The Disintegration of Personality

The national socialistic state could feel secure only if a childlike dependency and obedience of all subjects were assured to the interests of the supreme state. In order to create and maintain these childlike attitudes in adults, it was necessary to inhibit the higher integration of their personalities and their individualization and individual autonomy—the most dangerous enemy of the mass state.

In the child, nothing promotes growth toward higher integration more than success in independent action; fear of punishment often forces the child to give up all efforts directed toward greater independence and integration. While Hitler was in power the German citizen continuously lived in fear. He was threatened by extremely severe punishment if he dared to transgress orders, if he acted independently from the will of the father figure, the fuehrer. The national socialist state paid the highest reward for blind obedience to the fuehrer's authority. It withheld reward from independent efforts. Thus there was a premium on remaining on, or regressing toward a lower level of integration. The fear of punishment prevented nonintegrated persons from engaging in those independent experiences through which they might have gained ego strength and personality integration. It forced many to regress to a lower level of integration than had been previously reached so as to be able to give up dangerous autonomy in favour of safer obedience.

Individuals who successfully resisted the imposed mass living and therefore protected themselves against a regression into childlike dependency on a supposedly all powerful and omniscient father figure were dangerous to the regime, and hence, stronger methods of control were necessary to reduce them to embracing dependent behaviour similar to that of the rest of the population. The method of accomplishing this was the concentration camp.

Traumatization.—Whether or not being deprived of one's civil rights and unlawfully locked into a prison was experienced as a traumatic shock depended on the individual's personality. Nevertheless, if one wished to generalize, the prisoners' reactions could be analyzed on the basis of two categories: the socio-economic class to which they had belonged and their political education, although these categories frequently overlapped.

The nonpolitical middle class prisoners were the group most strongly traumatized by the experience of being imprisoned. They could not understand what had happened to them and why. They had always obeyed all orders of the authorities and therefore could not understand their persecution. Although unjustly imprisoned, they did not dare oppose their oppressors even in thought, although this would have given them self-respect of which they were at this moment so badly in need.

Their behaviour illustrated the conflict in which the respectable but politically uneducated German middle classes found themselves when confronted with the phe-

nomenon of national socialism. No consistent political or social philosophy protected their integrity as human beings and permitted them to oppose national socialism. Their self-esteem had always been based predominantly on the respect they enjoyed because of the character of their office, the outward honour paid to them as heads of their families, and other similar external factors which gave them status.

Members of this group were the first to disintegrate as autonomous persons. Suicides were mostly confined to their numbers. Many of them became antisocial; they resorted to bribery, cheating, stealing and even turned spies in the service of the gestapo (which did not help them, because the gestapo liked the betrayal, but despised the traitor).

Nearly all of these prisoners lost their desirable middle class characteristics, such as their sense of propriety and self-respect. In their stead, they developed to an exaggerated degree the undesirable characteristics of this group, such as pettiness, quarrelsomeness and selfishness. They became depressed, shiftless and complained eternally. They no longer seemed able to follow any life pattern of their own and seemed to exchange it for those developed by other prisoners which they copied.

Political prisoners had expected to be persecuted because of their political activities. They were less traumatized by their imprisonment because it did not come unexpectedly; they had anticipated it and thus were psychologically prepared for it.

They were fearful about their own fate and that of their families and friends.

Former criminals enjoyed finding themselves on an equal basis with persons who had been prominent politically, socially or economically. In their case imprisonment in itself did not constitute a strong enough traumatization for starting them on the process of personality change and disintegration. The same was true for the asocial prisoners. All prisoners were exposed to a severe traumatization during their transportation into the camp and during the first weeks in the camp itself.

Adjustment to the Camp.—The attitude of denying "reality" to experiences which were so extreme that they threatened the prisoner's personality integration was a first step toward developing new mechanisms needed for surviving in the camp. By denying reality to overwhelming situations these became somehow bearable, but at the same time this attitude already constituted a major change in experiencing the world. Thus, while this attitude was a necessary adjustment, it implied at the same time a personality change. The denial of reality was most obvious in extreme experiences which otherwise could not be managed.

The psychological reactions to events which were somewhat more within the sphere of the normally comprehensible were decidedly different from reactions to extreme experiences. Prisoners dealt with less extreme events the same as if they had happened outside the camp. For example, if a prisoner's punishment was not of an unusual kind, he seemed ashamed of it, and tried to conceal what had happened. If a prisoner was slapped in his face, it was more upsetting and embarrassing to him than if he had been whipped. Prisoners hated guards who had kicked, slapped or verbally abused them much more than they did guards who had wounded them seriously. In the latter case, the prisoner hated the gestapo as such, but not so much the individual who had inflicted the punish-

ment. Obviously this differentiation was unreasonable, but it seemed to be inescapable. Prisoners felt deeper and more violent enmity against particular gestapo members who had committed minor vile acts than they felt against those who had acted in a much more terrible fashion. An example may illustrate this: A gestapo man asked a prisoner to explain something to him. In doing so the prisoner forgot the rule that in the presence of a gestapo man he had always to stand at attention, and he bent over the desk. The gestapo officer thereupon slapped his fingers with a ruler he was holding in his hand. This slap was hardly a severe punishment when compared to those to which prisoners were exposed. Nevertheless, it upset the prisoner considerably. The reason for his strong reaction was that the event was too closely associated to what had happened to him in childhood. Therefore, it was an event which he had to accept in its entirety as real. Since it happened to him as an adult, it was unbearable.

The following interpretation of this phenomenon is tentative. It seems that experiences which might have happened during the prisoner's "normal" life history provoked a "normal" reaction. Prisoners seemed, for instance, particularly sensitive to punishments similar to those which a parent might inflict on his child. To punish a child was within their "normal" frame of reference, but that they should become the object of the punishment destroyed their adult frame of reference. So they reacted to it not in an adult, but in a childish way-with embarrassment and shame, with violent, impotent and unmanageable emotions directed not against the system, but against the person inflicting the punishment. A contributing factor might have been that the greater the punishment, the more the prisoner could expect to receive friendly support which exerted a soothing influence. Moreover, if the suffering was great, he felt more or less like a martyr, suffering for a cause, and the martyr is supposed not to resent his martyrdom.

Martyrdom is, in some ways, the highest assertion of individuality. It was, therefore, contrary to the gestapo ideology to permit prisoners to gain prominence through martyrdom. Since all were exposed to tortures, those who died under such tortures, although they were martyrs to their political conviction, were not considered martyrs by the other prisoners. Only those who suffered from their efforts to protect other prisoners were accepted as martyrs. The gestapo was usually successful in preventing the creation of martyrs through its anti-individualistic ideology, on the basis of which any individual action was suppressed or changed into a group phenomenon.

The prisoners as a group developed a resentment against minor sufferings. Not only did they not offer any help; they blamed the prisoner for having brought about his own suffering by his stupidity, by not having made the right reply, by having himself get caught, by not having been careful enough. In short, they accused him of having behaved like a child. So the degradation of the prisoner by means of being treated like a child took place not only in his own mind, but also in the minds of his fellow-prisoners. This attitude extended to small details. Thus, for instance, a prisoner did not resent being cursed by the guards during an extreme experience, but he hated the guards for similar cursing when it occurred during some minor mistreatment.

As time went on, most prisoners showed little difference in their reactions to minor or major sufferings because most of them had by then reached a stage of personality disintegration which seemed to indicate that the gestapo's effort to change them into docile, de-individualized and dependent subjects had succeeded.

Besides traumatization, the gestapo used mainly two other methods of disintegrating the prisoners as individuals; forcing them to become members of a mass rather than remaining autonomous individuals, and forcing them to adopt childlike behaviour.

Mass Behaviour.—Whenever possible, the prisoners were punished as a group; thus the whole group suffered with the individual who had brought the punishment about. The gestapo used this method probably because it was in line with its anti-individualistic philosophy and because it hoped that in this way the group would control the individual. It was in the group's interest to prevent the individual from endangering the group. Since the fear of punishment was, even in the concentration camp, more frequent than actual punishment, the group asserted its power over the individual more often and more effectively than the gestapo could.

Following the escape of two men from Buchenwald in 1938, the punishment imposed on all prisoners was that they could not receive meals but had to stand at attention until the fugitives were found. The prisoners knew that this was not an empty threat because on a previous similar occasion they had been forced to stand at attention for nearly 40 hours; but then it had been summertime while now it was an extremely cold winter evening with a blizzard in the offing. After more than 20 prisoners had died of exposure, the discipline broke down, because the mental attitude of most prisoners changed. Whereas before they had feared for themselves and had tried to protect themselves as well as possible, they now became depersonalized. It was as if giving up individual existence and becoming a member of a mass seemed in some way to offer better chances for survival, if not for the individual, at least for the group. To be exposed to the weather was a terrible torture; to see one's friends die without being able to help and to stand a good chance of dying, created a situation which obviously the individual as an individual could not meet successfully. Therefore, the individual as such had to disappear in the mass. The prisoners felt that what happened to them did not "really" happen to a "one." There was psychologically, and in experience, a split between the "figure" to whom things happened and the prisoner himself who did not care what happened to this figure and who was more or less a detached observer of events. Unfortunate as the situation was, the prisoners then felt free from fear as individuals and powerful as a mass because "not even the gestapo can kill all of us to-night." Therefore, they were actually happier than at most other times of their camp experiences, because they were relatively free from fear for themselves. They did not care whether the guards shot them; they were indifferent to acts of torture. The guards no longer had any authority; the spell of fear and death was broken. When this stage was reached, a quasiorgiastic happiness spread among the prisoners, who by forming a mass had thwarted the gestapo's effort to break them.

The gestapo's enforced control of the group over the individual prisoner also had its counterpart in the prisoner's self interest and thus made group control nearly inescapable. The treatment to which the prisoners were exposed filled them with justified rage. To give vent to it meant almost certain death. The group helped the individual to restrain himself.

Adopting Childlike Behaviour.-To be filled with im-

potent rage is a situation frequent in childhood, but disastrous for a maturely integrated ego. Therefore, the prisoners' aggressions had to be dealt with in some way, and the only safe way was to turn it against the self. This method increased masochistic and passive-dependent and childlike attitudes, which were "safe" because they prevented conflicts with the gestapo. The psychological mechanism inside the prisoner again coincided with the gestapo's effort to produce childlike dependency.

The prisoners were often tortured in ways which cruel and domineering fathers might adopt to torture helpless children. They were also debased by techniques which went much further into childhood situations. They were forced to soil themselves. Defecation was strictly regulated; it was one of the most important daily events, discussed in great detail. Prisoners who needed to eliminate had to obtain permission of a guard and to report to him on their return from the latrine. It was as if the precepts of cleanliness were once more being repeated. It gave the guards pleasure to hold the power of granting or withholding permission to visit the latrines. This pleasure found its counterpart in the pleasure the prisoners derived from visiting them, because there they could rest for a moment, relatively secure from the whips of the overseers and guards, although sometimes enterprising guards enjoyed interfering with the prisoners even there.

The prisoners were forced to say "thou" to one another, which in Germany is indiscriminately used only among small children. On the other hand, they had to address the guards in the most deferential manner, giving them all their titles.

Another influence contributing to the regression into childhood behaviour was the work the prisoners were forced to perform. New prisoners, particularly, were forced to perform nonsensical tasks, such as carrying heavy rocks from one place to another, and after a while back to the place where they had picked them up. They were forced to dig holes in the ground with their bare hands, although tools were available. They resented such nonsensical work, although it ought to have been immaterial to them whether their work was useful. They felt debased when forced to perform "childish" and stupid labour, and preferred even harder work when it produced something that might be considered useful. They felt even more debased when they were hitched like horses to heavy wagons, called "bog-express" (Moor Express) because they were first used by the "peat-bog" soldiers. Depending on the wagon's size, from 8 to 24 prisoners had to draw these heavy loaded wagons under the whips of the foremandriver, who often forced them to gallop.

The gestapo frequently assigned more meaningful tasks to "old" prisoners. This indicated that forcing prisoners to perform nonsensical labour was a deliberate effort to speed up their disintegration from self-respecting adults to obedient children. How these efforts succeeded could best be illustrated by comparing the behaviour of "new" prisoners in whom the process of reduction to citizenship in a gestapo-controlled microcosm had barely begun with "old" prisoners in whom it was nearly concluded.

Changes in "Old" Prisoners.—The term "new" prisoners was used for designating those who had not spent more than one year in the camp; "old" prisoners were those who had spent at least three years in the camp. There was, of course, considerable variation among individuals in the time it took them to adjust to life in the camps and become "old" prisoners. Some became a part of the camp life rather soon. A very few never made the adjustment, although some spent more than ten years in the camps.

The main concern of the new prisoners was to remain integrated as persons, so as to be able to return to the outer world as they had left it; all efforts, therefore, were directed toward this goal; an attempt was made to combat regression into childlike dependency. Old prisoners were mainly concerned with the problem of how to live as well as possible within the camp. Therefore they tried to integrate their personalities, as well as was feasible, on a level acceptable to the gestapo. Once they had embraced this attitude, everything that happened to them, even the worst atrocity, was "real" to them. No longer was there a split between a figure to whom things happened and the prisoner who detachedly observed what happened to this figure. The split in personality had disappeared, but the prisoner's personality was now integrated on a different and lower level; it was one of resignation, dependency, submission and passivity. The old prisoners were able to achieve this integration on a low level because they hardly believed they would ever return to the outer world, which had become strange to them. Once they had changed thus, they were afraid of returning because they doubted that they would be able to adapt to life in a free world. They seemed aware of what had happened to them while growing older in the camp. They realized that they had adapted themselves to the life in the camp and that this process was co-existent with a basic change in their personality.

Indicative of the acceptance of camp life as real was the tendency to scheme in order to find a better place of work in the camp, rather than to try to contact the outer world. New prisoners would spend their money on efforts to smuggle letters out of the camp or to receive communications without having them censored. Old prisoners did not use their money for such purposes. They used it for securing "soft" jobs, such as clerical work in the offices of the camp or labour in the shops where they were at least protected against the weather. This change also found its expression in a change in the prisoners' preponderant thoughts and topics of conversation; new prisoners were most concerned with their families and life outside of camp, while old prisoners were interested only in camp life. It so happened that on a single day news was received of a speech by President Roosevelt, denouncing Hitler and Germany, and rumours spread that one officer of the gestapo would be replaced by another. New prisoners discussed excitedly the president's speech and paid scant attention to the rumours. Old prisoners paid little attention to the president's speech, but devoted nearly all their conversations to the rumoured change in camp officers.

The old prisoner's attitude toward his family underwent a significant change. One of the reasons was the change in status from leadership to dependency. Now he was not only unable to influence his wife or children, but was utterly dependent on them to take steps to secure his release, and to send him all-important money. At first, most families behaved decently toward the prisoners. They spent a great deal of money in efforts to free them, often more than they could afford. But later on they ran out of funds. Wives found difficulties in finding employment because a family member was suspect; they could not receive unemployment compensation unless they divorced their husbands. Their children had difficulties at school; they were excluded from joining any of the many youth organizations. So it was only natural that they came to resent having a family member in the camp. These and similar attiQ

tudes were reflected in letters from home, if any.

Prisoners were not permitted to possess any pictures of their relatives. Thus, as time passed, recollections of their families grew dimmer, and the strongest bond which had kept them connected with the outside world grew weaker. The resentment of those who, rightly or wrongly, felt themselves deserted by their families, worked in the same direction. The less they received emotional support from the outside the more they were forced to adjust to life in the camp. Therefore, old prisoners did not like to be reminded of their families and former friends. When they spoke about them, it was in a very detached way. A contributing factor was the prisoners' hatred of all those living outside of the camp, who "enjoyed life as if we were not rotting away."

New prisoners always loved to speak about their relatives and friends even when they were complaining about them, and accusing them of not exerting themselves enough in helping them. They liked to talk about their position in the outside world and to paint it in the most glowing colours. They embarked also on long discussions of their hopes about their future after liberation. They seemed to be backing their self-esteem by letting others know how important they had been.

There was a marked difference between the daydreams of the new and the old prisoners. The longer the time a prisoner had spent in the camp, the less true to reality were his daydreams; so much so that the hopes and expectations of the old prisoners often took the form of eschatological or messianic hopes. They would daydream of the coming world war and world revolution; they were convinced that out of this great upheaval they would emerge as the future leaders of Germany at least, if not of the world. This was the least to which their sufferings entitled them. These grandiose expectations were co-existent with great vagueness as to which talents or achievements would justify such hopes. The daydreams were partly a countereffort, denying permanently the prisoners' state of utter dejection. They felt that only the highest external social status could help them regain self-respect and inner security.

One more feature of regression to infancy or early youth should be mentioned. The prisoners lived, like children, only in the immediate present; they lost the feeling for sequence of time; they became unable to plan for the future or to give up immediate pleasure satisfactions to gain greater ones in the near future. They were unable to establish durable object-relations. Friendships developed as quickly as they broke up. Prisoners, like adolescents, would fight one another tooth and nail, declare that they would never even look at one another or speak to one another, only to become close friends within a few minutes. They were boastful, telling tales about what they had accomplished in their former lives, or how they had succeeded in cheating foremen or guards. Like children, they felt not at all set back or ashamed when it became known that they had lied about their prowess.

Final Adjustment.—The result of all these personality changes was a personality structure willing and able to accept gestapo values and standards of behaviour as their own, although opposed to their own interests.

The national socialist race ideology and German nationalism were seemingly the easiest to accept. They were soon embraced even by formerly well-educated political prisoners. At one time, for example, U.S. and English newspapers reported the cruelties committed in the camps.

The gestapo punished the prisoners for the appearance of these stories, in accordance with their policy of punishing the group for whatever a former member did, (since the stories could have originated only in reports of former prisoners). In discussions of this event, old prisoners insisted that it was not the business of foreign newspaper correspondents to bother with internal German institutions. When more than 100 old political prisoners were asked in 1938 whether they thought that the story of the camp should be reported in foreign newspapers, many hesitated to agree that this was desirable. When they were asked whether they would participate in a war on the side of a foreign power to defeat national socialism in Germany, only two made the unqualified statement that everyone escaping Germany ought to fight the nazis to the best of his abilities.

Nearly all non-Jewish prisoners believed in the superiority of the German race. Nearly all were full of pride in the so-called achievements of the national socialist state, particularly its policy of expansion through annexation. In line with their acceptance of the racial ideology, most old prisoners took over the gestapo's attitude toward the so-called unfit prisoners.

Newcomers who did not stand up well under the strain tended to become a liability to the others. Moreover, weaklings were those most likely to turn traitors eventually. Therefore, old prisoners were sometimes instrumental in getting rid of the so-called unfit new prisoners, in this way making one feature of gestapo ideology a part of their own behaviour. This was done by giving new arrivals dangerous assignments, or by denying them help that could have been given.

Thus old prisoners moulded their way of treating other prisoners according to the example set by the gestapo. Another method was their treatment of traitors. Self-protection demanded their elimination, but the way in which they were tortured for days in the most horrid fashion and slowly killed was taken over from the gestapo. Here the excuse was that the act might deter others from turning traitors, but the rationalization could not be applied when prisoners turned their hostility against one another as they did continuously. Only their self-identification with the gestapo could explain why they used the gestapo's vocabulary, a vocabulary which they never had used before imprisonment. From copying the verbal aggressions of the gestapo to copying their form of bodily aggression was one more step which usually took several years. Old prisoners, and not only the criminals, often behaved worse than the gestapo.

Old prisoners tended to identify themselves with the gestapo not only in respect to aggressive behaviour. They tried to arrogate to themselves old pieces of gestapo uniforms. If that was not possible, they tried to sew and mend their uniforms so that they would resemble those of the guards, although the gestapo punished them for their efforts. When questioned, they admitted that they liked to look like one of the guards.

Old prisoners obtained great satisfaction, during the twice-daily counting of the prisoners, in standing well at attention, and at giving a snappy salute. This can be explained only by their having entirely accepted, as their own, the values of the gestapo. Prisoners also prided themselves on being as tough, or tougher than gestapo members. Self-identification with their torturers went as far as the copying of their leisuretime activities. One of the games played by the guards was to find out who could stand to be hit longest without uttering a complaint. This game was copied by old prisoners.



Gestapo officials recording data on incoming prisoners at a German concentration camp. Those waiting to be questioned are seated on the ground (left) under guard

Often the gestapo would enforce nonsensical rules, originating in the whims of one of the guards. They were usually forgotten as soon as formulated, but there were always some old prisoners who would continue to follow the rules and try to enforce them on others long after the gestapo had forgotten about them. Once, for instance, a guard on inspecting the prisoners' apparel found that the shoes of some of them were dirty on the inside. He ordered all prisoners to wash their shoes inside and out with water and soap. Treated this way, the heavy shoes became hard as stone. The order was never repeated, and many prisoners did not even execute it when given. Nevertheless, some old prisoners not only continued to wash the inside of their shoes every day but cursed all others who did not do so as negligent and dirty. These prisoners firmly believed that the rules set down by the gestapo were desirable standards of human behaviour, at least in the camp situation.

Among the old prisoners one could observe other developments which indicated their desire to accept the gestapo along lines which could never have originated in propaganda. Since their return to a childlike attitude toward the gestapo, they apparently had desired that at least some of those whom they accepted as all-powerful father images should be just and kind, and therefore, strange as it may seem, they had also positive feelings toward the gestapo. They divided their positive and negative feelings. All such positive emotions were concentrated on a few officers who were well up in the hierarchy of the camp administrators, but rarely on the governor of the camp. Prisoners insisted that these officers hid behind their rough surfaces a feeling of justice and propriety. They were supposed to be genuinely interested in the prisoners and even trying, in a small way, to help them. Since these supposed feelings never became apparent, it was explained that they had to hide them effectively, lest they become unable to help the prisoners. A whole legend was woven around the fact that of two officers inspecting a barracks, one had cleaned his shoes before entering. He probably did it automatically, but it was interpreted as a rebuff to the other officer and a clear demonstration of how he felt about the concentration camp.

Although much has been said about the old prisoners' tendency to conform and to identify themselves with the

gestapo, this was only part of the picture. All prisoners, including the old prisoners who identified themselves with the gestapo in many situations, defied the rules of the gestapo. In doing so, they occasionally demonstrated extraordinary courage, and many of them retained this courage and integrity all during their stay in the camps.

Psychological Defenses.—Even sooner than prisoners' organizations could be formed, each prisoner mustered his psychological defenses for protecting himself against the traumatic experiences to which the concentration camp subjected him.

The politically-educated prisoners found support for their self-esteem in the fact that the gestapo had singled them out as important enough to be objects of revenge. The members of different parties relied on different types of rationalization for thus buttressing their egos. Former members of radical-leftist groups found in the fact of their imprisonment a demonstration of how dangerous for the nazis their former activities had been. Former members of liberal groups argued that now it could be seen that they had been unjustly accused of a middle-of-the-road policy, since their imprisonment clearly demonstrated that the policy which they had advocated was what the nazis feared most, as could be seen from their imprisonment. Similar rationalizations were used by the comparatively few members of conservative groups, such as Catholics or monarchists, who felt their imprisonment as strongly as did members of the middle classes. But the high esteem in which they had been held before their imprisonment helped them to deny for some limited time the "reality" of what had been happening to them. They were still convinced of their exceptional position and therefore believed that they did not need to adjust to the camp; they believed they would soon be released because of their importance for society. This conviction was instrumental in forcing some middle class prisoners into the dependency of upper class prisoners because they hoped that they would help their former middle class "clients" to gain liberty after their release. Upper class prisoners therefore did not usually form a group, because each of them was surrounded by a group of middle class "clients." They could maintain their superior position only as long as there was some reason to believe in their speedy release and as long as they were able to distribute money freely. When time passed and experience convinced them and their clients that they were no better off in regard to re-

lease than were all other prisoners, their special status could not be maintained, and there was no longer any difference between them and other prisoners.

This was not equally true for the very few upper-upperclass, the formerly "anointed" prisoners. They neither collected "clients," nor were they as ready to use money for buying the favour or services of other prisoners; nor did they discuss their expectations of release. Their number was too small to permit any generalizations; they were mostly members of former royal families. They looked down on all other prisoners nearly as much as they despised the gestapo.

In order to endure life in the camp, they seemed to develop such a feeling of superiority that nothing touched them

It has been mentioned that one of the safeguards against personality disintegration was the strength of the ties which bound a prisoner to his family. The more important these ties were, the greater was the fear that they might be broken. A letter from home telling of efforts to liberate them brought tears of joy and remorse. But they might curse in the next moment when learning that some of their property had been sold or some other important decision made without their permission. They would then swear at their families, which "obviously" considered them "already dead." Even the smallest change in their former private world attained tremendous importance. They might have forgotten the names of some of their best friends, but on learning that the friends had moved, they were terribly upset. This ambivalence of the prisoners in relation to their families seemed to be due to their desire to return as exactly the person who had left.

Because they frequently forgot names and places, prisoners often feared they were losing their memories and intellectual capacities. The fear was enhanced by realization that they could no longer reason objectively. They knew that they were continuously swayed by emotions, particularly by their anxieties. This led to efforts to retain and cultivate their memories, often by attempts to recall what they had learned in school. Interestingly enough, they were best able to recall things they had learned by rote-facts which were disconnected with anything that may have had bearing on their existing life situations. They tried, for instance, to demonstrate the strength of their memories by repeating the names of the German emperors, the dates of their ascendency to the empire, the names of the popes and similar facts which they had memorized years before in class. Their efforts led to regressions into childhood situations, into automatic rather than spontaneous actions.

It has been mentioned that prisoners resented being forced to embark on nonsensical labour, that to be forced to do such labour contributed to their personality disintegration. Here the reverse may be discussed. In order to gain self-respect, prisoners tried to work well. Various rationalizations were used as justification, such as that the prisoners' work served the German people as a whole and not only the gestapo, or that it was important to work well in order to feel like a "real man." Some declared that by working hard one could convince the guards that the prisoners were not the scum of the earth, as the gestapo claimed.

Prisoners making the last type of statement were very close to indentifying themselves with the gestapo, since they looked to the guards for gaining prestige. But the

psychological reasons for the previously mentioned attitudes were manifold. By working well, a prisoner might have actually saved his life, and his self-respect might have been truly enhanced by his ability to work well. On the other hand, by adopting such attitudes, the prisoners were thrown into the conflict of having to serve the gestapo well in order to gain self-respect. This, in turn, was even more detrimental to their self-respect because it meant serving well those whom they despised, and who in turn despised them.

Intimidation of Civilians; Hostages

When the concentration camps were established, the gestapo detained in them their more prominent foes. Soon all prominent enemies were eliminated, because they were either dead, in jail, in the camps or had emigrated. Still, an institution was needed to threaten the opponents of the system. To imprison all of them would have interrupted the functioning of industrial production, the upholding of which was a paramount goal of the government. Therefore it seemed expedient to select a few members of a group which had become dissatisfied with the regime and to send them into the camps. For instance, if lawyers became restless, a few hundred lawyers were sent to the camps; the same happened to physicians when the medical profession seemed rebellious, etc. The gestapo called such group punishments "actions."

The new system was first used during 1937-38, when Germany was seriously preparing to embark on the annexation of foreign countries. During the first of these "actions," only the leaders of the opposition group were punished. The feeling thus arose that it was not dangerous to belong to a restive group as a mere member. Therefore, the gestapo revised its system and selected the persons to be punished so that they represented a cross section through the different strata of the dissatisfied group. This new procedure had the advantage of spreading terror among all members of the group. It also made it possible to punish and destroy the group without necessarily touching the leader if that was for some reason inopportune. At one time, for instance, a movement opposed to the government's regimentation of cultural activities centred around the person of the famous conductor Wilhelm Furtwaengler, although he himself did not take a stand on the issue. He was never threatened, but the group was destroyed by the imprisonment of a cross section of its members. Thus even if he had taken part in the movement, he would have found himself a leader without followers, and the movement would have subsided.

The best defense against the threat of being sent to the concentration camps was to obey blindly. Such automatic obedience asked for a denial of the values held previously and requested far reaching identification with national socialism. Those Germans, and there were many of them, who were unable or unwilling to make this identification could only hope not to be found out. Their attitude may be characterized by a jingle which was widely and fearfully quoted. It goes: "Dear Lord, make me dumb so that I do not have to go to Dachau." ("Lieber Gott, mach' mich stumm, Dass ich nicht nach Dachau kumm'.") Even more characteristic than the jingle itself was the example which it copied—the first rhymes taught to nearly every German child: "Dear Lord, make me devout, so that I will go to heaven."

Hostages.—The desire to force individuals to behave as the government wished them to behave out of their own will and in order to protect the fate of their kin was the openly admitted purpose of the hostage system. The gestapo never told the prisoners for how long they would have to remain in the concentration camp. The same was true of prisoners' relations. They were encouraged to inquire repeatedly in respect to the prisoners' release, whether or not they were permitted to send letters or money and for many other reasons.

Each of these visits to the gestapo office was a terrifying experience for the inquirer, because any wrong move might endanger himself, as well as the prisoner on whose behalf he intervened. In addition, the gestapo informed relatives that their own behaviour influenced the length of time the prisoner had to remain in the concentration camp. And if this would not have been sufficient, they also told them that the prisoner's release would depend on the behaviour of groups or on events which were entirely beyond the relatives' power to influence. Thus, at one time relatives were told that no prisoner would be released from Dachau unless all foreign newspaper stories about the atrocities committed in the camp were discontinued.

Training Centres for the Gestapo

The SS men, as previously stated, were at first recruited from among the old and tried followers of Hitler-individuals who had been hardened during the time of the street fights with the communists. But their ranks were not numerous enough to fill the big organization of the SS. Moreover, many of them moved to higher positions and had to be replaced by comparatively untried recruits, while others were no longer reliable followers of Hitler after the status of the party had changed from one of revolutionary fervour to one of supporting a well-established government. Up to 1936, probably the local gestapo was in charge of the camps. In 1936, the supervision of all camps was unified, and the position of a leader (commander or inspector) of all SS deathhead formations and concentration camps was created. Theodor Eicke was appointed to this position, in which he remained for a long time. He was responsible only to Heinrich Himmler. In 1937 he and his staff established their headquarters outside the concentration camp of Sachsenhausen, near Berlin. In 1938, the SS troups were reorganized into three large units. The most reliable SS men formed Hitler's bodyguard which was also held ready for special assignments, hence its name SS Disposition units (SS Verfuegungstruppe). Second in reliability came the SS deathhead units, whose main assignment for some time was the guarding of the prisoners in concentration camps. Finally there was the general SS (Allgemeine SS). During the war emergency, reliable SS troops were needed at the front; therefore, the SS deathhead units were used to form the SS deathhead tank division; nevertheless they still remained in charge of the concentration camps.

Before the war, every SS recruit had to serve at least another three months' postbasic training period during which he guarded concentration camp prisoners. How well he proved himself during this training was often decisive of whether he became a member of the deathhead units, or only of the general SS, or was discharged. During World War II, there were no longer enough volunteers for available SS positions, and from then on the gestapo was forced to accept SS recruits who were by no means typical SS material. Therefore the following discussion pertains mostly to the situation before and during the first years of the war.

When discussing the influence the camp experience had on the guards, their background should be considered. The new recruits who received their training in the camps were not old party members, but by now were at least noncommissioned officers training the recruits. Nor were they persons who had succeeded in their professions because then they would have continued in them. Very few of the guards were young men who previously had been permanently unemployed. These had belonged to the lumpen proletariat and had long since joined either the National Socialist party or the communists. Thus they were now either old party members or ineligible. The SS guards were not recruited from among the small shopkeepers, artisans, petty white collar workers or farmers themselves who had been the mass following of the National Socialist party, but they were their younger sons. In Germany usually the oldest son inherited the farm, or the shop, while his younger and therefore "disinherited" brothers had to look out for themselves as well as they

Thus the typical SS guard was the "squeezed out" son of a father who himself had been squeezed out of his former relatively comfortable economic position by the political and economic consequences of World War I and technological progress.

It was a group whose self-respect was very low to begin with.

The strict obedience which they had to observe towards their superiors and the hardships of their basic training added to their feeling of resentment. Moreover, not all Germans showed them the respect which they had hoped would be their due as soon as they donned the black uniform of the SS. True, nearly everybody feared them—a reaction which at one time was so strong that the guards of the camp Buchenwald were called "the killerboys" in the nearby city of Weimar, a stronghold of national socialism. At that time no self-respecting girl dated the guards. It took some special pressure and propaganda to combat their social ostracization.

Their past disappointments and the existing frustrations of the guards would have led them to look for scapegoats against whom they could turn their aggressions even if the prisoners had not been available. To this was added the fear and suspicion which the uneducated German had of the intelligentsia. While the guards were partially master of the life and death of prisoners, they were continuously afraid of being "found out" as unintelligent and incompetent. This created in them a very uncomfortable feeling, and some guards were even jealous of the prisoners. Cruelty was not always the result of complicated psychological processes. It was frequently exercised to avoid suspicions of disloyalty in the minds of their superiors. Also, because of the internal organization of the camp, contacts with some prisoners were unavoidable. Through them the gestapo men learned that the prisoners were neither as dangerous nor as vile as had often been thought. Then a few gestapo men tried to change their behaviour. But this put them into a precarious position because they were accused of fraternization. Therefore they had to continue to remain brutal, and their sense of uneasiness and guilt grew. From then on much of their brutality had the character of denying that they felt guilty or were afraid of their own actions.

Many of the rules and regulations which the gestapo introduced into the life of the concentration camps seemed farcical on casual inspection. Their real purpose was not so much to regulate the life of the prisoners, but rather to restore the feeling of security of the SS men, which was badly shaken by the injustice which they not only

observed but perpetrated. The height in this farce of legality was reached when prisoners in concentration camps were forced to take out insurance against work accidents, or had to sign documents saying that they were well satisfied with the way they had been treated by the gestapo. The gestapo was very serious about such matters and put emphasis on such documents as demonstrations that everything happened in accordance with law and order.

It should be stressed in conclusion, that the camps' pur pose of providing training in inhumanity was less important than their purpose of influencing behaviour and even personality structure among the rest of the German population

The concentration camps were experimental labora tories for the gestapo, in which human beings served as guinea pigs. The nature of some of this experimentation has already been indicated. It should be particularly stressed that, according to the best authorities, the scientific values of these experiments were nil. It might be added that this had to be expected, because experimental efforts based on erroneous premises only rarely produce valid results.

Some of these experiments differed from other biological and medical research only in the fact that human beings took the place of experimental animals. This was true, for instance, of many experiments in grafting muscles and bones and of malaria, cancer and typhus research

Other experimentation concentrated on findings which might be useful during the war. Experiments along these lines were those in which prisoners were exposed to low pressure as it exists in the stratosphere, or were immersed in ice cold water in order to study the best methods for reviving or protecting fliers who had to descend in such waters. But most of the so called research efforts in the concentration camps concerned themselves with eugenics. Thus a great deal of "research" was done in the sterilization of members of the "lower" races, culminating in the extermination camps

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A Few last words may seem in order about the world's reaction to the concentration camps. The terrors committed in them were experienced as uncanny by most civilized persons. It came as a shock to their pride that supposedly civilized nations could stoop so low as to com mit such inhumane acts. Three psychological mechanisms were most frequently used for dealing with the phe nomenon of the concentration camp. (a) Its applicability to man in general was denied by asserting (contrary to available evidence) that the acts of torture were committed by a small group of insane or perverted persons, thus having no applicability to man in general. (b) The veracity of the reports were denied and they were ascribed to deliberate propaganda. This method incidentally was most frequently used by the German government, which called all reports on terror in the camps horror propaganda (Greuelpropaganda). (c) The reports were believed, but the knowledge of the terror was repressed as soon as possible

All three mechanisms were observable after the defeat of Germany in 1945. After the "discovery" of the camps, a wave of extreme outrage swept the Allied nations. It was soon followed by a general repression of the discovery Possibly, this was an indication of how dangerous to one's self-respect was the acceptance of power of another's will,

even that of the state, to change one's personality, an admission that must be dealt with by action—or by repres

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Confectionery

See CANDY.

Conferences, Allied

See International Conferences, Allied (World War II)

Congo, Belgian

See BELGIAN COLONIAL EMPIRE.

Congregational Christian Churches

The Congregational Churches dated their beginning in the U.S with the first settlement at Plymouth, Mass, in 1620 Subsequently the "Mayflower" Pilgrims merged with the later Puritans to form the Congregational Churches In 1931 these churches merged with the Christian Church founded before the Revolutionary War

The denomination from its earliest days preached and taught democratic ideals and sought to support and to extend these ideals in the common life. It fostered schools, colleges, social agencies and the democratic way in both church and state

At the end of the decade 1937-46 the denomination included 5,836 self governing churches linked together by voluntary ties of fellowship in common endcavour. In addition there were 678 missionary churches of this fellow ship in foreign lands. The membership of the churches in the USA was 1,130,824 with 121,200 members of the mission churches—a total of 1,252,024. The roll of ministers included 5,882 ordained persons, of whom 3,111 were pastors, 120 denominational officials, 101 missionaries 263 educators, 433 chaplains. The benevolent giving was \$3,951,495 and the home expenses of the churches \$19,301,121. Total property was \$171,892,927 and the in vested funds of the churches totalled \$31,225,155.

The American Board for Foreign Missions reported income of \$1,327,800 with investments of \$8,054,338 and the Board of Home Missions expenses of \$1,626,636 and investments of \$25,350,525. The annuity fund income was \$1,392,233 and investments were \$11,341,814. The total income of all the national agencies from all sources was \$6,232,247 and the investments were \$52,744,646.

The central office of the denomination was the General Council of Congregational Christian Churches, 287 Fourth Ave New York 10, NY. (F L F)

Congress, United States

The decade 1937-46 was spanned by the 75th-79th congresses of the United States Following is the member ship of the 75th congress, followed by that of the 80th congress, elected in Nov 1946. The list for the 75th congress is as of Jan. 1938, for the 80th congress, Jan 1947

75th Congress (1937-38)

Senate.-

State	Name
Ala	Bankhead, John H
Arız	Graves, Mrs Dixie Bibb Ashurst, Henry F Hayden, Carl

Party Residence

Dem Jasper

Dem Montgomery

Dem Prescott

Dem Phoenix

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<i>State</i> Ark	Name Caravian Harra W	Part,	Residence					CONGRES
Calıf	Caraway, Hattie W Miller John E Johnson Haran W	Dem Dem	Jonesboro Searcy				D .	
	Johnson, Hiram W McAdoo, William G	Rep Dem	San Franci co Los Angeles	S ate Calif	1	Lea Clarence F	Party Dem	Residence Santa Rosa
Colo	Adams, Alva B Johnson, Edwin C	Dem Dem	Pueblo Craig		2 3	Buck, Frank H	Rep Dem	Nevada City Vacaville
Conn	Lonergan, Augustine Maloney Francis T	Dem Dem	Hartford Meriden		4 5		Pro Rep	San Francisco San Francisco
Del	Townsend, John G. Ir	Rep Dem	Selbyville Dover		6 7	Carter Albert E Tolan John H	Rep Dem	Oakland Oakland
I la	Hughes James H Pepper, Claude Andrews, Charles O	Dem Dem	Tallahassee Orlando		8	McGrath John J Gearhart Bertrand W	Dem Rep	San Mateo Fresno
Ga	George, Walter F Russell, Richard B , Jr Borah William F	Dem	Vienna		10 11	Elliott Albert J	Dem Dem	Tulare Tujunga
Ida	Borah William F	Dem Rep	Winder Boise		12 13	Voorhis Jerry	Dem	San Dimas
111	Pope, James P Lewis James H	Dem Dem	Boise Chicago		14	Ford, Thomas F	Dem Dem	Los Angeles Los Angeles
Ind	Dieterich, William H Van Nuys Frederick	Dem Dem	Beardstown Indianapolis		15 16		Dem Dem	Hollywood Los Angeles
Iowa	Minton, Sherman Gillette, Guy M	Dem Dem	New Albany Cherokee		17 18	Colden Charles J Scott Byron N	Dem Dem	San Pedro Long Beach
Kan	Herring, Clyde La V Capper, Aithur	Dem Rep	Des Moines Topeka		19 20	Sheppard, Harry R Izac, Edouard V M	Dem Dem	Yucaipa San Diego
Ky	Capper, Arthur McGill, George • Barkley, Alben W, Majori y Leader	Dem Dem	Wichita Paducah	Colo	1 2	Le vis, Lawrence Cummings Fred	Dem Dem	Denver Fort Collins
La	Logan, Marvel M Overton, John H	Dem Dem	Bowling Green Alexandria		3 4	Cummings Fred Martin, John A Taylor, Edward T Citron, William M	Dem Dem	Pueblo Glenwood Springs
Me	Ellender Allen J Hale, Frederick	Dem	Houma	Conn	1	Citron, William M	Dem Dem	Middletown Hartford
	White, Wallace H, Jr	Rep Rep	Portland Auburn		2	Kopplemann, Herman P Fitzgerald William J Shanley James A	Dem Dem	Norwich New Haven
Md	Tydings, Millard E Radcliffe, George L	Dem Dem	Havre de Grace Baltimore		4	Shanley James A Phillips, Al. ed N , Ji Smith, J Joseph Allen, William F Peterson J Hardin	Dem	Stamford
Mass	Walsh, David I Lodge, Henry C, Jr	Dem Rep	Fitchburg Beverly	Del	5	Allen, William F	Dem Dem	Waterbury Seaford
Mich	Vandenberg, Arthur H Brown, Prentiss M	Rep Dem	Grand Rapids St Ignace	I la	1 2		Dem Dem	Lakeland Starke
Mınn	Shipstead Henrik Lundeen, Ernest	F L F L	Miltona Edina Village		3 4	Caldweli Millard F Wilcox J Mark	Dem Dem	Milton West Palm Beach
Miss	Harrison, Pat	Dem Dem	Gulfport	Ga	5 1	Caldweli Millard F Wilcox J Mark Hendricks, Joe Peterson Hugh	Dem Dem	De Land Ailey
Mo	Bilbo, Theodore G Clark, Bennett C	Dem	Poplarville Ladue Village		2	Cox, Ed vard E Pace, Stephen	Dem Dem	Camilla Americus
Mont	Truman, Harry S Wheeler, Burton K	Dem Dem	Independence Butte		4 5	Owen, Emmett M	Dem	Griffin
Neb	Murray, James E Norris, George W	Dem Ind	Butte McCook		6	Ramspeck, Robert Vinson, Carl	Dem Dem	Decatur Milledgeville
Nev	Burke, Edward R Pittman, Key	Dem Dem	Omaha Tonopah		8	Tarver, Malcolm C Deen, Braswell D	Dem Dem	Dalton Alma
NΗ	McCarrán, Patrick A Biown, Fred H	Dem Dem	Reno Somersworth		9 10	Whelchel, B Frank Brown Paul	Dem Dem	Gainesv lle Elberton
ΝJ	Bridges, Henry S Smathers, William H	Rep Dem	East Concord Margate	Ida	1 2	White, Compton I Clark, D Worth	Dem Dem	Clarksfork Pocatello
-	Moore, Atthur H	Dem Dem	Jersey City Clovis	Ill		Champion, Edwin Van M Long, Lewis M	Dem Dem	Peoria Sandwich
NM	Hatch, Carl A Chavez, Dennis	Dem	Albuquerque		1 2	Mitchell Aithur W McKeough Ray nond S	Dem Dem	Chicago Chicago
NΥ	Copeland, Royal S Wagner, Robert F	Dem Dem	New York City New York City		3	Kelly, Edward A Beam, Harry P	Dem Dem	Chicago Chicago
NC	Bailey, Josiah W Reynolds, Robert R	Dem Dem	Raleigh Asheville		5	Sabath, Adolph J	Dem Dem	Chicago Chicago
ΝD	Frazier, Lynn J Nye, Gerald P	Rep Rep	Hoople Cooperstown		7	O Brien, Thomas J Schuetz, Leonard W	Dem	Chicago
Ohio	Búlkley, Robert J Donahey, Vic	Dem Dem	Cleveland Columbus		9	Kocialkowski, Leo McAndrews, James	Dem Dem	Chicago Chicago
Okla	Thomas, Elmer Lee, Josh	Dem Dem	Medicine Park Norman		10 11	Reed, Chauncey W	Rep Rep	Evanston West Chicago
Ore	NcNary, Charles L, Minarity Leader Steiwer, Frederick	Rep Rep	Salem Portland		12 13	Allen, Leo E	Rep Rep	Oglesby Galena
Pa	Davis Tames I	Rep Dem	Pittsburgh Pittsburgh		14 15	Boyer, Lewis L	Dem Dem	Rock Island Quincy
RI	Guffey, Joseph F Gerry, Peter G	Dem Dem	Warwick Providence		16 17	Dirksen, Everett Mck Arends, Leslie C	Rep Rep	Pekin Melvin
SC	Green, Theodore F Smith, Ellison DuB	Dem	Lynchburg		18 19	Meeks, James A Rigney, Hugh M	Dem Dem	Danville Arthur
SD	Byrnes, James F Bulow, William J	Dem Dem	Spartanburg Beresford		20 21	Lucas, Scott W Fries, Frank W	Dem Dem	Havana Carlinville
Tenn	Hitchcock, Herbert E McKellar, Kenneth	Dem Dem	Mitchell Memphis		22 23	Schaefer, Edwin M Arnold, Laurence F	Dem Dem	Belleville Newton
Тех	Berry, George L Sheppard, Morris	Dem Dem	Rogersville Texarkana		24 25	Parsons, Claude V	Dem Dem	Golconda Ava
Utah	Connally, Tom King, William H	Dem Dem	Marlin Salt Lake City	Ind	1 2	Keller, Kent E Schulte, William T Halleck, Charles A	Dem	Hammond
Vt	Thomas, Elbert D Austin, Warren R	Dem Rep	Salt Lake City Burlington		3	Pettengill, Samuel B	Rep Dem	Rensselaer South Bend
	Gibson, Ernest W	Rep Dem	Brattleboro Lynchburg		4 5	Halleck, Charles A Pettengill, Samuel B Parley, James I Griswold, Glenn Jonckes, Mis Virginia E Greenwood, Arthur H Boehne, John W Jr Crowe, Lugene B Gray, Finly H Larrabee, William H Ludlow, Louis Eicher, Edward C	Dem Dem	Auburn Peru
Va	Glass, Carter Byrd, Harry F	Dem Dem	Berryville Tacoma		6 7	Jenekes, Mis Virginia E Greenwood, Arthur H	Dem Dem	Terre Haute Washington
Wash	Bone, Homer T Schwellenbach, Lewis B	Dem	Seattle Fairmont		8	Boehne, John W Jr Crowe, Lugene B	Dem Dem	Evansy lle Bedford
W Va	Neely, Matthew M Holr, Rush D	Dem Dem	Weston		10 11	Giay, Finly H Larrabee, William H	Dem Dem	Connersville New Palestine
Wis	LaFollette, Robert M, Jr Duffy, F Ryan	Pro Dem	Madison Fond du Lac	Iowa	12	Ludlow, Louis Eicher, Edward C	Dem Dem	Indianapolis Washington
Wyo	O'Máhoney, Joseph C Schwartz, Harry H	Dem Dem	Cheyenne Casper	20114	2 3	Jacobsen, William S	Dem Rep	Clinton Waterloo
Н	ouse of Representatives.—				4	Jacobsen, Wilham S Gwynne, John W Biermann, Fred Thurston, Lloyd	Dem	Decorah
State	Dist Name	Party	Residence		5 6	Dowell, Cassius C Wearin, Otha D	Rep Rep	Osceola Des Moines
Ala	1 Boykin, Frank W 2 Hill, Lister	Dem Dem	Mobile Montgomery		7 8	Gilchrist, Fred C	Dem Rep	Hastings Laurens
	3 Steagall, Henry B 4 Hobbs, Sam	Dem Dem	Ozark Selma	Kan	9 1	Harrington, Vincent F Lambertson, William P	Dem Rep	Sioux City Fairview
	5 Starnes, Joe	Dem Dem	Guntersville Livingston		2	Guyer, Ulysses S Patterson, Edward W	Rep Dem	Kansas City Pittsburg
	7 Bankhead, William B, Speaker of the House	Dem Dem	Jasper Huntsville		4	Rees, Edward H	Rep Dem	Emporia Newton
	8 Sparkman, John J 9 Patrick, Luther	Dem	Birmingham Tempe		6 7	Houston, John M Carlson, Frank Hope, Clifford R	. Rep Rep	Concordia Garden City
Arız Ark	Murdock, John R 1 Driver, Wilham J	Dem Dem	Osceola	Ky	1 2	Gregory, Noble J Vincent, Beverly M	Dem. Dem	Mayfield Brownville
	2 Vacant 3 Fuller, Claude A	Dem	Eureka Springs		3	O'Neal, Emmet Creal, Edward W	Dem Dem	Louisville Hodgenville
	4 Cravens Ren	Dem Dem	Fort Smith Little Rock		5	Spence, Brent	Dem	Fort Thomas
	5 Terry, David D 6 McClellan, John L 7 Kitchens, Wade H	Dem Dem	Malvern Magnolia		6 7	Chapman, Virgil May, Andrew J	Dem Dem	Paris Prestonsburg

RESS, U.S					State N Y	Dıs 3		<i>Party</i> Dem	Residence Brooklyn
State	Dıst	Name	Party	Residence		4	Pfeifer, Joseph L Cullen, Thomas H Evans, Marcellus H	Dem Dem	Brooklyn Brooklyn
Ky	8	Vinson, Fred M	Dem	Ashland		6	Somers, Andrew L	Dem Dem	Brooklýn Brooklyn
La	9	Robsion, John M Fernandez, Joachim O	Rep Dem	Barbourville New Orleans		7 8	Delaney, John J O'Toole, Donald L Keogh, Eugene J	Dem	Brooklyn
	2	Maloney, Paul H Mouton, Robert L	Dem Dem	New Orleans Lafayette		9 10	Keogh, Eugene J Celler, Emanuel	Dem Dem	Brooklyn Brooklyn
	4	Brooks, Overton	Dem	Shreveport		11 12	O'Leary, James A	Dem Dem	W New Brighton New York City
	6	Mills, Newt V Griffith, John K	Dem Dem	Mer Rouge Slidell		13	Dickstein, Samuel Sullivan, Christopher D Sirovich, William I	Dem Dem	New York City New York City
	7	DeRouen, Rene L Allen, A Leonard	Dem Dem	Ville Platte Winnfield		14 15	Boylan, John J	Dem	New York City
Me	1	Oliver, James C Smith, Clyde H	Rep Rep	South Portland Skowhegan		16 17	O'Connor, John Barton, Bruce	Dem Rep	New York City New York City
	3	Brewster, Ralph O	Rep	Dexter		18	Kennedy, Martin J	Dem Dem	New York City New York City
Md	1 2	Goldsborough, T Alan Cole, William P, Jr	Dem Dem	Denton Towson		19 20	Bloom, Sol Lanzetta, James J	Dem	New York City
	3	Palmisano Vincent I.	Dem Dem	Baltimore Baltimore		21 22	Lanzetta, James J Gavagan, Joseph A Curley, Edward W	Dem Dem	New York Cty Bronx
	5	Kennedy, Ambrose J Gambrill, Stephen W	Dem	Laurel		23 24	Buckley, Charles A Fitzpatrick, James M	Dem Dem	Bronx Bronx
Mass	1	Lewis, David J Treadway, Allen T	Dem Rep	Cumberland Stockbridge		25	Gamble, Ralph A	Rep	Larchmont
	2	Clason, Charles R	Rep Dem	Springfield Clinton		26 27	Fish, Hamilton Rockefeller, Lewis K	Rep Rep	Garrison Chatham
	4	Casey, Joseph E Holmes Pehr G	Rep	Worcester Lowell		28 29	Byrne, William T Cluett, E Harold	Dem Rep	Loudonville Troy
	5 6	Rogers, Mrs Edith N Bates, George J	Rep Rep	Salem		30	Crowther, Frank	Rep	Schenectady Potsdam
	7 8	Connery, Lawrence J Healey, Arthur D Luce, Robert	Dem Dem	Lynn Somerville		31 32	Snell, Bertrand H, Minority Leader Culkin, Francis D	Rep Dem	Oswego
	9 10	Luce, Robert	Rep Rep	Waltham Boston		33 34	Douglas, Fred J Lord Bert	Rep Rep	Utica Afton
	11	Tinkham, George H Flaherty, Thomas F	Dem	Boston		35 36	Hancock Clarence E	Rep Rep	Syracuse Auburn
	12	McCormack, John W Wigglesworth, Richard B	Dem Rep	Boston Milton		37	Taber, John Cole, W Sterling	Rep	Bath
	14 15	Marun, Joseph W, Jr Gifford, Charles L	Rep Rep	North Attleboro Barnstable		38 39	Kelly, George B Wadsworth, James W	Dem Rep	Rochester Geneseo
Mich	1	Sadowski, George G Michener, Earl C	Dem	Detroit		40 41	Andrews, Walter G Beiter, Alfred F	Rep Dem	Buffalo Williamsville
	2	Michener, Earl C Shafer, Paul W	Rep Rep	Adrian Battle Creek		42	Mead, James M	Dem	Buffalo
	4	Hoffman Clare E Mapes, Carl E	Rep Rep	Allegan Grand Rapids	NC	43 1	Reed, Daniel A Warren, Lindsay C	Rep Dem	Dunkirk Washington
	6	Transue, Andrew J	Dem	Flint		2 3	Kerr, John H	Dem Dem	Warrenton New Bern
	7 8	Transue, Andrew J Wolcott, Jesse P Crawford, Fred L	Rep Rep	Port Huron Saginaw		4	Barden, Graham A Cooley, Harold D	Dem	Nashville
	9 10	Engel, Albert J Woodruff, Roy O	Rep Rep	Lake City Bay City		5 6	Hancock, Franklin W, Jr Umstead, William B	Dem Dem	Oxford Durham
	11	Luecke, John	Dem	Escanaba		7	Clark, J Bayard	Dem Dem	Fayetteville
	12 13	Hook Frank E O'Brien, George D	Dem Dem	Ironwood Detroit		8	Lambeth, J Walter Doughton, Robert L	Dem	Thomasville Laurel Springs
•	14 15	O'Brien, George D Rabaut, Louis C Dingell, John D Lesinski, John	Dem Dem	Detroit Detroit		10 11	Bulwinkle, Alfred L Weaver, Zebulon	Dem Dem	Gastonia Asheville
	16	Lesinski, John	Dem	Dearborn	ND		Burdick, Usher L	Rep Rep	Williston
Minn	17 1	Dondero, George A Andresen, August H	Rep Rep	Royal Oak Red Wing	Ohio		Lemke, William McSweeney, John	Dem	Fargo Wooster
	2	Ryan, Elmer J Teigan, Henry G	Dem F L	South St Paul Minneapolis		1	Mosier, Harold G Dixon, Joseph A	Dem Dem	Cleveland Cincinnati
	4 5	Teigan, Henry G Maas, Melvin J	Rep F L	St Paul Minneapolis		2	Bigelow, Herbert S Harlan, Byron B	Dem Dem	Cincinnati Dayton
	6	Johnson, Dewey W Knutson, Harold	Rep	St Cloud		4	Vacant		
	7 8	Kvale, Paul J Bernard, John T	F L F L	Benson Eveleth		5 6	Kniffin, Frank C Polk, James G	Dem Dem	Napoleon Highland
Miss	9	Bernard, John T Buckler, Richard T	F L Dem	Crookston Tupelo		7 8	Aleshire, Arthur W Fletcher, Brooks	Dem Dem	Springfield Marion
172403	2	Rankin, John E Doxey, Wall	Dem	Holly Springs		9	Hunter, John F	Dem	Toledo
	3 4	Whittington, William M Ford, Aaron L	Dem Dem	Greenwood Ackerman		10 11	Jenkins, Thomas A Claypool, Harold K	Rep Dem	Ironton Chillicothe
	5 6	Collins, Ross A Colmer, William M	Dem Dem	Meridian Pascagoula		12 13	Lamneck, Arthur P White, Dudley A	Dem Rep	Columbus Norwalk
Ma	7 1	McGehee, Dan R	Dem Dem	Meadville		14 15	Harter, Dow W	Dem Dem	Akron
Мо	2	Romjue, Milton A Nelson, William L	Dem	Macon Columbia		16	Secrest, Robert T Thom, William R	Dem	Caldwell Canton
	3 4	Duncan, Richard M Bell, C Jasper	Dem Dem	St Joseph Kansas City		17 18	Ashbrook, William A Imhoff, Lawrence E	Dem Dem	Johnstown St Clairsville
	5	Shannon, Joseph B Wood, Reuben T	Dem Dem	Kansas City		19 20	Kirwan, Michael I	Dem Dem	Youngstown Cleveland
	7	Short, Dewey	Rep	Springfield Galena		21	Sweeney, Martin L Crosser, Robert	Dem	Cleveland
	8 9	Williams, Clyde Cannon, Clarence	Dem Dem	Hillsboro Elsberry	Okla	22	Fleger, Anthony A Rogers, Will	Dem Dem	Parma Oklahoma City
	10 11	Zimmerman, Orville Hennings, Thomas C. Ir	Dem Dem	Kennett St Louis		1 2	Disney, Welsey E Nichols, Jack	Dem Dem	Tulsa Eufaula
	12	Anderson, C. Arthur	Dem	Lemay		3	Cartwright, Wilburn	Dem	McAlester
Mont	1	O'Connell, Jerry J	Dem Dem	St Louis Butte		5	Boren, Lyle H Smith, Gomer	Dem Dem	Seminole Oklahoma City
Neb	2	O'Connor, James F Luckey, Henry C	Dem, Dem	Livingston Lincoln		6 7	Johnson, Jed Massingale, Sam C	Dem Dem	Anadarko Cordell
	2	McLaughlin, Charles F	Dem Rep	Omaha Norfolk	Ore	8 1	Ferguson, Phil Mott, James W	Dem	Woodward
	4	Binderup, Charles G	Dem	Minden	Ole	2	Pierce, Walter M	Rep Dem	Salem La Grande
Nev	5	Scrugham, James G	Dem Dem	Chadron Reno	Pa	3 1	Honeyman, Mrs Nan W Sacks, Leon	Dem Dem	Portland Philadelphia
NΗ	1 2	Jenks, Arthur B	Rep Rep	Manchester Temple		2 3	McGranery, James P Bradley, Michael J Daly, J Burrwood Dorsey, Frank J G Stack, Michael J Drew Ira W	Dem Dem	Philadelphia
NJ	1 2	Wolverton, Charles A	Rep	Merchantville		4	Daly, J Burrwood	Dem	Philadelphia Philadelphia
	3	Sutphin William H	Dem Dem	Vineland Matawan		5 6	Stack, Michael J	Dem Dem	Philadelphia Philadelphia
	4 5		Rep Rep	Trenton North Plainfield		7 8	Drew Ira W Wolfenden, James	Dem	Philadelphia
	6 7	McLean, Donald H	Rep	Elizabeth		9	Frev. Oliver W	Rep Dem	Upper Darby Allentown
	8	Seger, George N	Rep Rep	Allendale Passaic		10 11	Roland Patrick I	Rep Dem	Lancaster Scranton
	9 10	Kenney, Edward A	Dem Rep	Cliffside Park Kearny		12 13	Flannery, J Harold	Dem	Pittston
	11	O'Neill Edward L	Dem	Newark		14	Moser, Guy L	Dem Dem	Coaldale Douglassville
	12 13	Norton, Mrs Marv T	Dem Dem			15 16		Rep Rep	Honesdale Woolrich
NM	14	Hart, Edward J	Dem Dem	Jersey City		17 18	Ditter, J William	Rep	Ambler
N M N Y		Dempsey, John J Merritt, Matthew J O'Day, Mrs. Caroline	Dem	Flushing		19	Swope, Guy J	Rep Dem	Huntingdon Harrisburg
	1	O'Day, Mrs Caroline Bacon, Robert L	Dem Rep	Rye Old Westbury		20 21	Walter, Francis E	Rep Dem	Farrell Easton
	2	Barry, William B	Dem	Hollis		22	Haines, Harry L	Dem	Red Lion

Term Expires

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State	D_{i}	d Mana		
Pa	23		Party	Residence
14	24	Gingery, Don Snyder, J Buell Faddis, Charles I	Dem Dem	Clearfield Perryopolis
	25	Faddis, Charles I	Dem	Waynesburg
	26 27	Cray Joseph	Dem Dem	Beaver
	28	Eckert, Charles R Gray, Joseph Allen, Robert G	Dem	Spangler Greensburg
	29 30	Crosby, Charles N	Dem	Meadville
	31	DeMuth, Peter J Quinn, James L	Dem Dem	Pittsburgh Braddock
	32	Eberharter, Herman P	Dem	Pittsburgh
	33 34	Ellenbogen, Henry Dunn, Matthew A	Dem Dem	Pittsburgh
RΙ	1	Forand, Aime I	Dem	Pittsburgh Central Falls
SC	2 1	O'Connell, John M McMillan, Thomas S	Dem	Westerly
3 G	2	Fulmer, Hampton P Taylor, John C Mahon G Heyward Ir	Dem Dem	Charleston Orangeburg
	3	Taylor, John C	Dem	Anderson
	5	Manon, G Ticyward, It	Dem Dem	Greenville Lancaster
	6	Richards, James P Gasque, Allard H	Dem	Florence
SD	1 2	Hildebrandt, Fred H Case, Francis H	Dem Rep	Watertown Custer
Tenn	1	Reece B Carroll	Rep	Johnson City
	2	Taylor, J Will	Rep	Johnson City La Follette
	4	McReynolds, Sam D Mitchell, John R	Dem Dem	Chattanooga Cookeville
	5	Mitchell, John R Atkinson, Richard M Turner, Clarence W Pearson, Herron	Dem	Nashville
	7	Pearson Herron	Dem Dem	Waverly Jackson
	8	Cooper, Jere	Dem	Jackson Dyersburg
Tex	1	Chandler, Walter Patman, Wright	Dem. Dem	Memphis Texarkana
101	2	Dies, Martin	Dem	Orange
	23456121234567891234567890		Dem Dem	Canton Bonham
	5	Sumners, Hatton W	Dem	Dallas
	6	Rayburn, Sam, Majority Leader Sumners, Hatton W Johnson, Luther A Patton, Nat	Dem	Corsicana
	8		Dem. Dem.	Crockett Houston
	9	Mansfield, Joseph J	Dem	Columbus
	11	Mansfield, Joseph J Johnson, Lyndon Poage, William R	Dem Dem	Austin Waco
	12	Lannam, Fritz G	Dem	Fort Worth
	13 14	McFarlane, William D Kleberg, Richard M	Dem Dem	Graham Corpus Christi
	15		Dem	Brownsville
	16 17	West, Million II Thomason, R Ewing Garrett, Clyde L Jones, Marvin Mahon, George H Maverick, Maury	Dem Dem	El Paso Eastland
	18	Jones, Marvin	Dem	Amarıllo
	19 20	Mahon, George H	Dem Dem	Colorado
	21	South, Charles L	Dem	San Antonio Coleman
Utah	1	Murdock, Abe Robinson, J Will Plumley, Charles A Bland, Schuyler O	Dem	Beaver Provo
Vt	2	Plumley, Charles A	Dem. Rep	Northfield
Va	1	Bland, Schuyler O	Dem	Newport News
	2 3	Hamilton, Norman R Satterfield, Dave E	Dem Dem	Portsmouth Richmond
	4	Drewry, Patrick H Burch, Thomas G	Dem	Petersburg
	5	Burch, Thomas G	Dem Dem	Martinsville Roanoke
	7	Woodrum, Clifton A Robertson, A Willis	Dem	Lexington
	8	Smith Howard W	Dem Dem	Alexandria Bristol
Wash	4 5 6 7 8 9 1 2 3 4	Flannagan, John W, Jr Magnuson, Warren G Wallgren, Monard C	Dem	Seattle
	2	Wallgren, Monard C	Dem Dem	Everett Hoquiam
	4	Smith, Martin F Hill, Knute	Dem	Prosser
	5 6	Hill, Knute Leavy, Charles H Coffee, John M Ramsay, Robert L Randolph, Jennings Edmiston, Andrew Johnson, George W Kee, John Smith, Joe L Amlie, Thomas R Sauthoff, Harry Withrow, Gardner R	Dem Dem	Spokane Tacoma
W Va	1	Ramsay, Robert L	Dem	Tacoma Follansbee
	2	Randolph, Jennings	Dem	Elkins
	4	Edmiston, Andrew Johnson, George W	Dem Dem	Weston Parkersburg
	5	Kee, John	Dem	Bluefield
Wıs	6	Smith, Joe L	Dem Pro	Beckley Elkhorn
**15	2	Sauthoff, Harry	Pro	Madison
	3	Withrow, Gardner R	Pro Dem	La Crosse Milwaukee
	5	Sauthon, Harry Withrow, Gardner R Cannon, Raymond J O'Malley, Thomas Reilly, Michael K Reiley, Carald I	Dem	Milwaukee
	6	Reilly, Michael K	Dem Pro	Fond du Lac Wausau
	3 4 5 6 1 2 3 4 5 6 7 8	Schneider, George I	Pro	Appleton
	9	Reilly, Michael K Boileau, Gerald J Schneider, George J Hull, Merlin Gehrmann, Bernard I	Pro Pro	Black River Falls Mellen
Wyo	10	Gehrmann, Bernard J Greever, Paul R	Dem	Cody
.,-				

State	Name	Party	1 erm Expires	Residence
Ga	George Walter F Russell, Richard B Taylor, Glen H Dworshak, Henry C Brooks, C Wayland Lucas, Scott W Casabast Home F	Dem	1951	Vienna
I ia	Russell, Richard B	Dem Dem	1949 1951	Winder Pocatello
	Dworshak, Henry C	Rep	1949	Burley
111	Brooks, C Wayland	кер	1949	Chicago
Ind	Capehart, Homer E	Dem Rep	1951 1951	Havana Washington
	Capehart, Homer E Jenner, William E Wilson, George A Hickenlooper, Bourke B Capper Arthur	Ken	1951 1953	Bedford
Iowa	Wilson, George A Hickenlooper, Bourke B	Rep Rep	1949 1951	Des Moines Cedar Rapids
Kan	Capper, Arthur	Ren	1949 1951	Topeka
Ky	Capper, Arthur Reed, Clyde M Barkley, Alben W Minority Leader Cooper, John S	Rep Dem	1951 1951	Parsons Paducah
LLy	Cooper, John S	Rep	1949	Somerset
La	Overton, John H	Dem	1951	Alexandria
Me	Brewster, Owen	Dem Rep	1949 1953	Houma Dexter
	Overton, John H Ellender, Allen J Brewster, Owen White, Wallace H, Jr Maj Leader Tydings, Millard E O'Conor, Herbert R Saltonstall, Leverett Lodge, Henry Cabot, Jr Vandenberg, Arthur H Ferguson, Homer	Rep	1949	Auburn
Md	O'Conor, Herbert R	Dem Dem	1951 1953	Havre de Grace Annapolis
Mass	Saltonstall, Leverett	Ren	1953 1949	Boston
Mich	Lodge, Henry Cabot, Jr Vandenberg, Arthur H 1	Rep Rep	1953 1953	Beverly Grand Rapids
	Ferguson, Homer	Ken	1949	Detroit
Mınn	Fergison, Honel Ball, Joseph H Thye, Edward J Eastland, James O Bilbo, Theodore G Donnell, Forrest C	Kep	1949 1953	St Paul Northfield
Miss	Eastland, James O	Rep Dem	1040	Ruleville
	Bilbo, Theodore G	Dem	1953	Poplarville
Mo	Donnell, Forrest C Kem James P	Rep Rep	1953 1951 1953 1949	Webster Groves Kansas City
Mont	Murray, James E	Dem	1949	Butte
Neb	Donnell, Forrest C Kem, James P Murray, James E Ecton, Zales N Wherry, Kenneth S Butler, Hugh A McCarran, Patrick A Malone, George W Tobey, Charles W Bridges, H Styles Hawkes, Albert W	Rep Rep	1953 1949	Manhattan Pawnee City
	Butler, Hugh A	Rep	1953 1951	Omaha
Nev	McCarran, Patrick A	Dem	1951 1953	Reno
NΗ	Tobey, Charles W	Rep Rep	1951	Reno Temple
	Bridges, H Styles	Ken	1949	Concord
ΝJ	Hawkes, Albert W Smith, H Alexander	Rep Rep	1949 1953	Montclair Princeton
NΜ	Hatch, Carl A	Dem	1949	Clovis
NΥ	Chavez, Dennis	Dem Dem	1953	Albuquerque New York city
	Wagner, Robert F Ives, Irving M Umstead, William B ² Hoey, Clyde R Langer, William Young, Milton R Taft, Robert A Bricker Lohn W	Rep	1951 1953	Norwich
NC	Umstead, William B ²	Dem Dem	1949 1951	Durham Shelby
ND	Langer, William	Rep	1953 1951	Bismarck
Ohara	Young, Milton R	Rep	1951	Berlin
Ohio	Bricker, John W	Rep.	1951 1953	Cincinnati Columbus
Okla	Thomas, Elmer Moore, E H	Dem.	1951	Medicine Park
Ore	Moore, E H Cordon Guy	Rep Rep	1949 1949	Tulsa Roseburg
	Moore, En Cordon, Guy Morse, Wayne L Myers, Francis J	Rep	1951	Roseburg Eugene
Pa	Myers, Francis J	Dem Rep	1951	Philadelphia
RI	Martin, Edward Green, Theodore F McGrath, J Howard Johnston, Olin D	Dem	1953 1949	Washington Providence
sc	McGrath, J Howard	Dem Dem	1953 1951	Providence
3 4	Maybank, Burnet R	Dem.	1949	Spartanburg Charleston
SD	Bushfield, Harlan J	Rep	1949	Miller
Tenn.	Gurney, Chan McKellar Kenneth	Rep Dem	1951 1953	Yankton Memphis
	Stewart, Tom	Dem	1949	Winchester
Tex	O'Daniel, W Lee	Dem Dem	1949 1947	Fort Worth Marlin
Utah	Johnston, Olin D Maybank, Burnet R Bushfield, Harlan J Gurney, Chan McKellar, Kenneth Stewart, Tom O'Daniel, W Lee Connally, Tom Thomas, Elbert D Watkins, Arthur V	Dem	1951	Salt Lake City
Vt		Kep	1953	Orem
	Aiken, George D Flanders, Ralph E	Rep Rep	1951 1953 1947	Putney Springfield
Va	Byrd, Harry F	Dem	1947	Berryville
Wash	Magnuson, Warren G	Dem Dem	1953 1951 1953	Lexington Port Blakely
	Rainels, Kanhi E Byrd, Harry F Robertson, A Willis Magnuson, Warren G Cain, Harry P Revercomb, Chapman Kilgore, Harley M Wiley, Alexander McCarthy, Joseph R	Rep	1953	Tacoma Charleston
W Va	Kevercomb, Chapman Kulgore, Harley M	Rep Dem	1949 1953	Charleston Beckley
Wis	Wiley, Alexander	Rep	1951	Chippewa Falls
Wyo	McCarthy, Joseph R	Rep Dem	1953 1953	Appleton Cheyenne
77 yu	McCarthy, Joseph R O'Mahoney, Joseph C Robertson, Edward V.	Rep	1949	Cody
TJ o	use of Denrecentatives /*	cerved	ın 70+1	Congress)

80th Congress (1947-48)

Senate.-

			1 erm		
State	Name	Party	Expires	Residence	
Ala	Hill, Lister	Dem	1951	Montgomery	
	Sparkman, John J	Dem	1949	Huntsville	
Arız	McFarland, Ernest W	Dem	1953	Florence	
	Hayden, Carl	Dem	1951	Phoenix	
Ark	Fulbright, J W	Dem	1951	Fayetteville	
	McClellan, John L	Dem	1949	Camden	
Calıf	Knowland, William F	Rep	1953	Oakland	
	Downey, Sheridan	Dem	1951	Laguna Beach	
Colo	Johnson, Edwin C	Dem	1949	Craig	
	Millikin, Eugene D	Rep	1951	Denver	
Conn	McMahon, Brien	Dem		Norwalk	
	Baldwin, Raymond E	Rep	1953	Stratford	
Del	Buck, C Douglass	Rep	1949	Wilmington	
	Williams, John J	* Rep	1953	Millsboro	
Fla	Pepper, Claude	Dem	1951	Tallahassee	
	Holland, Spessard L	Dem	1953	Bartow	

House of Representatives.—(*served in 79th Congress)

110	Just	or representatives.—(SCI VCG III //II	1 Congress)
State	Dist.	Name	Party	Residence
Ala	1	*Boykin, Frank W	Dem	Mobile
	2	*Grant, George M	Dem	Troy
	3	*Andrews, George W	Dem	Union Springs
	4	*Hobbs, Sam	Dem.	Selma
	5	*Rains, Albert	. Dem	Gadsden
	6 7	*Jarman, Pete	. Dem	Livingston
		*Manasco, Carter	Dem.	Jasper
	8	Vacancy ³		• •
	9	Battle, Laurie C	. Dem	Birmingham
Arız.		*Harless, Richard F	. Dem	Phoenix
		*Murdock, John R	Dem	Tempe
Ark	1	*Gathings, E C	Dem	West Memphis
	2 3	*Mills, Wilbur D	Dem	Kensett
	3	*Trimble, James W	Dem	Berryville
	4 5	*Cravens, Fadjo	Dem	Fort Smith
	5	*Hays, Brooks	Dem	Little Rock
	6	*Norrell, W F	Dem	Monticello
	7	*Harris, Oren	Dem	El Dorado

¹President pro tempore of the senate in the absence of a vice-president ²Appointed Dec 17, 1946, to fill the vacancy caused by the death of Josiah W Bailey, Dec 15, 1946 ³Vacancy caused by the resignation of John J Sparkman, Nov 5, 1946

	S.				Ky	Dzst 7	Meade W Howes	Rep	Paintsville
 State	Dist	Name	Party	Residence	,	8 9	*Bates loe B	Dem Rep	Greenup Barbourville
Calıf	1	*Lea, Clarence F	Dem	Santa Rosa	La	1 2	*Robsion, John M *Hébert, F Edward Boggs, Hale	Dem Dem	New Orleans New Orleans
	2	*Engle, Clair *Johnson, J. Lerov	Dem Rep	Red Bluff Stockton		3	*Domengeaux James	Dem	Lafayette
	4 5	*Johnson, J Leroy *Havenner, Franck R *Welch, Richard J	Dem Rep	San Francisco San Francisco		4 5	*Brooks, Overton Passman, Otto E	Dem Dem	Shreveport Monroe
	6	*Miller George P	Dem	Alameda		6	*Morrison, James H *Larcade, Henry D, Jr	Dem Dem	Hammond Opelousas
	7 8	Allen, John J, Jr *Anderson, John Z *Gearhart Bertrand W	Rep Rep	Oakland San Juan Bautista		8	*Allen, A Leonard	Dem	Winnfield
	9	*Gearhart Bertrand W	Rep Dem	Fresno Tulare	Me	1 2	*Hale, Robert *Smith, Margaret Chase	Rep Rep	Portland Skowhegan
	10 11	*Elliott, Alfred J Bramblett, Ernest K	Rep	Pacific Grove		3	*Fellows, Frank Miller, Edward T	Rep	Bangor
	12 13	Nixon, Richard M Poulson, Norris	Rep Rep	Whittier Los Angeles	Md	1 2	Miller, Edward 1 Meade, Hugh A	Rep Dem	Easton Baltimore
	14	*Douglas, Helen Gahagan	Dem	Los Angeles		3 4	*D'Alesandro, Thomas, J	Dem Dem	Baltimore
	15 16	*McDonough, Gordon L Jackson, Donald L	Rep Rep	Los Angeles Santa Monica		5	*Fallon, George H *Sasscer Lansdale G	Dem	Baltimore Upper Marlboro
	17	*King, Ćecil R	Dem Rep	Los Angeles Long Beach	Mass	6 1	*Beall, J Glenn *Heselton, John W	Rep Rep	Frostburg Deerfield
	18 19	Bradley, Willis W *Holifield, Chet	Dem	Montebello	112435	2	*Clason, Charles R	Rep	Springfield
	20 21	*Hinshaw, Carl *Sheppard, Harry R	Rep Dem	Pasadena Yucaipa		3 4	*Philbin, Philip J Donohue, Harold D	Dem Dem	Clinton Worcester
	22	*Phillips, John	Rep	Banning		5 6	*Rogers, Édith Nourse *Bates George J	Rep Rep	Lowell Salem
Colo	23 1	Fletcher, Charles K Carroll, John A *Hill, William S	Rep Dem	San Diego Denver		7	*Lane, Thomas I	Dem	Lawrence
	2	*Hill, William S *Chenoweth J Edgar	Rep Rep	Fort Collins Trinidad		8	*Goodwin Angier L *Gifford, Charles L	Rep Rep	Melrose Cotuit
	4	*Rockwell, Robert I'	Rep	Paonia		10	*Herter, Christian A	Rep	Boston
Conn	1 2	Miller, William J Seeley Brown, Horace, J	Rep Rep	Wethersfield Pomfret Center		11 12	Kennedy, John F *McCormack John W	Dem Dem	Boston Dorchester
	3	Foote, Ellsworth B	R_{cp}	North Branford		13 14	*Wigglesworth, Richard B	Rep	Milton North Attleboro
	4 5	Lodge, John Davis Patterson, James T	Rep Rep	Westport Naugatuck	Mich	1	*Martin, Joseph W, Jr Spealer of Ho *Sadowski, George G	Dem	Detroit
Del		Sadlak, Antoni N	Rep Rep	Rockville Wilmington		2	*Michener, Earl C *Shafer, Paul W	Rep Rep	Adrian Battle Creek
Fla	1	Boggs, J Caleb *Peterson, J Hardin	Dem	Lakeland		4	*Hoffman, Clare E	Rep	Allegan
	2	*Price, Emory H *Sikes, Robert L F	Dem Dem	Jacksonville Crestview		5 6	*Jonkman, Bartel J *Blackney, William W	Rep Rep	Grand Rapids Flint
	4	Smathers, George A	Dem	Miami De Land		7	*Wolcott, Jesse P	Rep	Port Huron
	5 6	*Hendricks, Joe *Rogers, Dwight L	Dem Dem	Fort Lauderdale		9	*Crawford, Fred L *Engel, Albert J	Rep Rep	Saginaw Muskegon
Ga	1 2	Preston, Prince H *Cox, Edward E	Dem Dem	Statesboro Camilla		10 11	*Woodruff Roy O *Bradley, Fred	Rep Rep	Bay City Rogers City
	3	*Pace, Stephen	Dem	Americus		12	Bennett, John B	Rep	Ontonagon
	4 5	*Camp, A Sidney • Davis, James C	Dem Dem	Newnan Decatur		13 14	Coffin, Howard A Youngblood, Harold Γ	Rep Rep	Detroit Detroit
	6	*Vinson, Carl	Dem Dem	Milledgeville Rome		15 16	*Dingell, John D *Lesinski, John	Dem Dem	Detroit
	8	Lanham, Henderson Wheeler, W. M	Dem	Alma		17	*Dondero, George A	Rep	Dearborn Roval Oak
	9 10	*Wood, John S *Brown, Paul	Dem Dem	Canton Elberton	Mınn	1 2	*Andresen, August H *O'Hara Joseph P	Rep Rep	Red Wing Glencoe
Ida	1	Goff, Abe McGregor	Rep	Moscow		3	MacKinnon George	Rep	Minneapolis
111	2 1	Sanborn, John *Dawson, William L	Rep Dem	Hagerman Chicago		5	Devitt, Edward J *Judd, Walter H	Rep Rep	St Paul Minneapolis
	2 3	Varl, Richard B Busbey, Fred E	Rep Rep	Chicago Chicago		6 7	*Knutson, Harold *Andersen, H Carl	Rep Rep	Manhattan Beach
	4	*Gorski, Martin	Dem	Chicago		8	Blatnik, John A	Dem	Tyler Chisholm
	5 6	*Sabath, Adolph J *O'Brien, Thomas J	Dem Dem	Chicago Chicago	Miss	9 1	*Hagen, Harold C *Rankın, John E	Rep Dem	Crookston Tupelo
	7 8	Owens, Thomas L *Gordon, Thomas S	Rep Dem	Chicago Chicago		2	*Whitten, Jamie L	Dem	Charleston
	9	Twyman, Robert J	Rep	Chicago		4	*Whittington, William M *Abernethy, Thomas G	Dem Dem	Greenwood Okolona
	10 11	*Church, Ralph E *Reed, Chauncey W	Rep Rep	Evanston West Chicago		5 6	*Winstead, Arthur *Comer, William M	Dem Dem	Philadelphia Pascagoula
	12 13	*Mason, Noah M	Rep Rep	Oglesby Galena	Mo	7	Williams, John Bell	Dem	Raymond
	14	*Johnson, Anton J	Rep	Macomb	MIO	2 3	*Arnold, Wat *Schwabe, Max	Rep Rep	Kirksville Columbia
	15 16	*Chiperfield, Robert B *Dirksen, Everett Mck.	Rep Rep	Canton Pekin		3 4	*Cole, William C *Bell, C Jasper	Rep Dem	St Joseph
	17	*Arends, Leslie C	Rep	Melvin Paris		5	Reeves, Albert L r	Rep	Blue Springs Kansas City
	18 19	*McMillen, Rolla C	Rep Rep	Decatur		6 7	*Bennett Marion T *Short, Dewey	Rep Rep	Springfield Galena
	20 21	*Simpson, Sid *Howell, Evan	Rep Rep	Carrollton Springfield		8	Banta, Parke M *Cannon, Clarence	Rep	Arcadia
	22 23 24	*Price, Melvin	Dem	East St Louis		10	*Zimmerman, Orville	Dem Dem	Elsberry Kennett
	24	*Vursell, Charles W *Clippinger, Roy	Rep Rep	Salem Carmı		11 12	Bakewell, Claude I *Ploeser, Walter C	Rep Rep	St Louis Chesterfield(RFD)
	25	*Vursen, Charles W *Clippinger, Roy *Bishop, C W Stratton, William G *Madden, Ray J *Halleck, Charles A Majority Leader *Grant, Robert A *Gillie, George W *Harness, Forest A	Rep Rep	Carterville Morris	Mont	13 1	Karsten Frank M	Dem	St Louis
Ind	1	*Madden, Ray J	Dem	Gary		2	*Mansfield, Mike *D'Ewart, Wesley A *Curus, Carl T	Dem Rep	Missoula Wilsall
	3	*Grant, Robert A Majority Leader	$egin{array}{c} ext{Rep} \end{array}$	Rensselaer South Bend	Neb	1 2	*Curtis, Carl T *Buffett, Howard H	Rep	Minden
	4	*Gillie, George W	Rep	Fort Wayne Kokomo		3	*Stefan, Karl	Rep Rep	Omaha Norfolk
	6	*Johnson, Noble J	Rep	Terre Haute	Nev	4	*Miller, A L Russell, Charles H	Rep Rep	Kımball
	7 8		Rep Rep	Linton Evansville	NH	1	Merrow, Chester E	Rep	Ely Center Ossipee
	9	*Wilson, Earl	Kep	Huron	NЈ	2 1	Cotton, Norris *Wolverton, Charles A	Rep Rep	Lebanon Merchantville
	10 11	*Springer, Raymond S *Ludlow, Louis	Rep Dem	Connersville Indianapolis	-	2 3	*Hand, T Millet *Auchincloss, James C	Rep	Cape May City
Iowa	1 2	*Ludlow, Louis *Marun, Thomas E *Talle, Henry O	Rep Rep	Iowa City Decorah		4	*Mathews, Frank A, Jr *Eaton, Charles A	Rep Rep	Rumson Riverton
	3	*Gwynne, John W	Kep	Waterloo		5 6	*Case Clifford P	Rep Rep	Watchung
	5	*Cunningham, Paul	Rep Rep	Corydon Des Moines		7 8	*Thomas, J Parnell *Canfield, Gordon	Rep	Rahway Allendale
	4 5 6 7	*Dolliver, James I *Jensen, Ben F	Rep	Fort Dodge		9	*Towe, Harry L	Rep Rep	Paterson Rutherford
	8	*Hoeven, Charles B	Rep Rep	Exira Alton		10 11	*Hartley, Fred A , Jr *Sundstrom, Frank L	Rep	Kearny
Kan	1 2	. "Gole, Albert M	Rep Rep	Holton Kansas City		12	*Kean, Robert W	Rep Rep	East Orange Livingston
	3	Meyer, Herbert A	Rep	Independence		13 14	*Norton, Mary T *Hart, Edward J	Dem	Jersey City
	4 5	*Rees, Edward H *Hope, Clifford R	Rep Rep	Emporia Garden City	NΜ		*Fernandez, Antonio M	Dem. Dem	Jersey City Santa Fe
r.	6	Smith, Wint	Rep	Mankato	NΥ	1	Lusk, Georgia L Macy, W Kingsland	Dem Rep	Santa Fe Islip
Ку	2	*Clements, Earle C	Dem Dem	Mayfield Morganfield		2	Macy, W Kingsland *Hall, Leonard W *Latham, Henry J	Rep	Oyster Bay
	3	Morton, Thruston Ballard *Chelf, Frank L	Rep Dem	Glenview Lebanon		4	McMahon, Gregory	Rep Rep	Queens Village Ozone Park
	5	*Spence, Brent	\mathbf{Dem}	Fort Thomas		5 6	Ross, Robert Tripp Nodar, Robert, Jr	Rep	Jackson Heights
	C	*Chapman, Virgil	Dem	Paris		7	*Delaney, John J	Rep Dem	Maspeth Brooklyn

NINGHAM

State	Dis		Party	Residence			CONCRESSIO	MAL IECK	CLATION CON
NΥ	8 9		Dem Dem.	Brooklyn Brooklyn	-		CONGRESSIC	MAL LEGIS	SLATION * CON
	10 11	*Somers, Andrew L	Dem.	Brooklyn	State	Dist		Party	Residence
	12	*Rooney, John J	Dem Dem	Brooklyn Brooklyn	Pa	26 27	*Tibbott, Harve *Kelley, Augustine B	Rep Dem	Ebensburg
	13 14	*Rooney, John J *O'Toole, Donald L *Rayfiel, Leo F	Dem Dem	Brooklyn		28	Kearns, Carroll D	Rep	Greensburg Farrell
	15	*Celler, Emanuel	Dem	Brooklyn Brooklyn		29 30	Kearns, Carroll D McDowell John *Corbett, Robert J *Fulton, James G	Rep Rep	Wilkinsburg Bellevue
	16 17		Rep Rep	Staten Island New York city New York city		31	*Fulton, James G	Rep	Dormont
	18 19	Coudert, Frederic R, J *Marcantonio, Vito Klein, Arthur G	Rep Am L	New York city		32	*Eberharter, Herman P	Dem	(Pittsburgh) Pittsburgh
	20	*Bloom, Sol	Dem Dem	New York city	RI	33 1	Buchanan Frank *Forand, Aime J	Dem Dem	McKeesport Cumberland
	21 22	Javits, Jacob K *Powell, Adam C, Jr *Lynch, Walter A	Rep	New York city			*Fogarty, John E *Rivers, L Mendel	Dem	Harmony
	20 21 22 23 24 25 26 27 28 29	*Lynch, Walter A	Dem Dem	New York city	SC	2 1 2 3 4	*Rivers, L. Mendel *Riley, John J	Dem Dem	Charleston Sumter
	25	*Rabin, Benjamin J *Buckley, Charles A	Dem Dem	New York city		3	*Riley, John J Dorn, W J Bryan *Bryson, Joseph R *Richards, James P *McMillan, John L *Mundt, Karl E *Case Francis	Dem	Greenwood
	26	Potts, David M	Rep	TYCW I OLK CITY		5	*Richards, James P	Dem Dem	Greenville Lancaster
	28	*Gwinn Ralph W *Gamble, Ralph A	Rep Rep	Bronxville Larchmont	SD	6 1	*McMillan, John L *Mundt Karl E	Dem Rep	Florence Madison
	29 30	Ct Coorma Vatharina	Rep	Tuxedo Park		2		Rep	Custer
	31	*Kearney Bernard W	Rep Rep	New Paltz Gloversville	Tenn	2 1 2 3	Phillips Dayton E *Jennings, John E, Jr *Kefauver, Estes	Rep Rep	Elizabethton Knoxville
	31 32 33 34	*LeFevre, Jay *Kearney Bernard W *Byrne, William T *Taylor, Dean P *Kilburn Clarence E *Fuller, Hadwen C	Dem Rep	Loudonville Troy		3 4	*Kefauver, Estes *Gore, Albert	Dem Dem	Chattanooga
	34 35	*Kilburn Clarence E	Rep	Malone		5	Evins, Joe L	Dem	Carthage Smithville
	36	Michigan, it wanter	Rep Rep	Parish Tully		6 7	*Priest, J Percy *Courtney, Wirt	Dem Dem	Nashville Franklin
	37 38	*Hall, Edwin Arthur *Taber, John *Cole, W Sterling Keating, Kenneth B *Wadswot th, James W *Andrews, Walter G *Elsaesser, Edward J *Butler, John C *Reed, Damel A *Bonner, Herbert C *Kerr, John H *Barden, Graham	Rep Rep	Binghamton Auburn		8	Evins, Joe L Priest, J Percy *Courtney, Wirt *Murray, Tom *Cooper Jere *Davis, Clifford *Partis.	Dem	Jackson
	39	*Cole, W Sterling	Rep	Bath		10	*Davis, Clifford	Dem Dem	Dyersburg Memphis
	40 41	*Wadsworth, Tames W	Rep Rep	Rochester Geneseo	Tex	1 2	*Patman Wright *Combs, J M *Beckworth, Lindley	Dem Dem	Texarkana Beaumont
	42 43	*Andrews, Walter G	Rep	Buffalo		3	*Beckworth, Lindley	Dem	Gladewate r
	44	*Butler, John C	Rep Rep	Buffalo Buffalo		4 5	*Rayburn, Sam, Minority Leader Wilson, J. Frank Teague, Olin E *Pickett, Tom	Dem Dem	Bonham Dallas
NC	45 1	*Reed, Daniel A	Rep Dem	Dunkirk Washington		6 7 8	Teague, Olin E	Dem	College Station
., 0	2	*Kerr, John H	Dem	Warrenton			*Thomas, Albert *Mansfield, Joseph J *Johnson, Lyndon B *Poage, William R Lucas, Wingate H *Gossett, Ed *Luca Leb F	Dem Dem	Palestine Houston
	3 4	*Barden, Graham *Cooley, Harold D *Folger, John H *Durham, Carl T *Clark, J Bayard Deane, Charles B *Poughers, Babart I	Dem Dem	New Bern Nashville		9 10	*Mansfield, Joseph J *Johnson, Lyndon B	Dem Dem	Columbus Johnson City
	5	*Folger, John H	Dem	Mount Airy		11	*Poage, William R	Dem	Waco
	6 7	*Clark, I Bayard	Dem Dem	Chapel Hill Fayetteville		12 13	*Gossett, Ed	Dem Dem	Grapevine Wichita Falls
	8	Deane, Charles B	Dem Dem	Rockingham Laurel Springs		14 15	*Lyle, John E *West, Milton H	Dem Dem	Corpus Christi Brownsville
	10	*Doughton, Robert L Jones Hamilton C	Dem	Charlotte		16	Thomason, K. Ewing	Dem	El Paso
	11 12	*Bulwinkle Alfred I Redden, Monroe M *Lemke, William	Dem Dem	Gastonia Hendersonville		17 18	Burleson, Omar *Worley, Eugene	Dem Dem	Ansom Shamrock
ND		*Lemke, William	Rep	Fargo		19	*Mahon, George H	Dem	Colorado City
Ohio	1	*Robertson, Charles R *Elston, Charles H *Hess, William E	Rep Rep	Bismarck Cincinnati		20 21	*Fisher, O C	Dem Dem	San Antonio San Angelo
	2	*Hess, William E	Rep	Cincinnati Hamilton	Utah	1 2	*Granger, Walter K	Dem Rep	Cedar Čity Layton
	4	Burke, Raymond H *Jones, Robert I	Rep Rep	Lima	Vt	-	*Plumley Charles A	Rep	Northfield
	5 6	*Clevenger, Cliff *McCowen Ldward O	Rep Rep	Bryan Wheelersburg	Va	1 2	Burleson, Ömar *Worley, Eugene *Mahon, George H *Kılday, Paul J *Fisher, O C *Granger, Walter K Dawson, William A *Plumley Charles A *Bland, Schuyler Otts Hardy, Porter, Jr *Gary, J Vaughan *Drewry, Patrick H Stanley, Thomas B Almond, J Lindsay, Jr Harrison, Burr P *Smith, Howard W	Dem Dem	Newport News Norfolk
	7	*Brown, Clarence J *Smith, Frederick C	Rep	Blanchester		2 3 4	*Gary, J Vaughan	Dem	Richmond
	8	*Pamer Homer A	Rep Rep	Marion Toledo		5	Stanley, Thomas B	Dem Dem	Petersburg Stanleytown
	10	*Jenkurs, Thomas A *Brehm, Walter E *Vorys, John M *Weichel, Alvin T *Huber, Walter B	Rep Rep	Ironton Logan		6 7	Almond, J. Lindsay, Jr.	Dem Dem	Roanoke Winchester
	11 12	*Vorys, John M	Rep	Columbus		8	*Smith, Howard W	Dem	Alexandria
	13 14	*Weichel, Alvin F	Rep Dem	Sandusky Akron	Wash	9 1	'Smith, Howard W 'Flannagan, John W, Jr Jones, Homer R 'Jackson, Henry M Norman, Fred 'Holmes, Hal 'Horan, Walter F Tolletson, Thor C Love Francy I	Dem Rep	Bristol Bremerton
	15	Grimths, P W	Rep	Marietta		2	*Jackson, Henry M	Dem Rep	Everett
	16 17	Carson, Henderson H *McGregor, J Harry	Rep Rep	Canton West Lafayette		4	*Holmes, Hal	Rep	Raymond Ellensburg
	18	*Lewis, Larl R	Rep Dem	St Clairsville Youngstown		5 6	*Horan, Walter F	Rep Rep	Wenatchee Tacoma
	19 20	*Kirwan, Michael J *Feighan, Michael A	Dem	Cleveland	W Va		Dove, Trancis	Rep	Wheeling
	21 22	*Crosser, Robert *Bolton Frances P	Dem Rep	Cleveland Lyndhurst		2	Snyder, Melvin C Rohrbough, Edward G	Rep Rep	Kingwood Glenville
۵		*Bender, George H	Kep	Cleveland Heights		4 5	Ellis, Hubert 5	Rep	Huntington
Okla	1 2	*Schwabe, George B *Stigler, William G	Rep Dem	Tulsa Stigler		6	*Kee, John *Hedrick, E H *Smith, Lawrence H	Dem Dem	Bluefield Beckley
	3	Albert, Carl	Dem Dem	McAlester Okemah	Wis	1 2	*Smith, Lawrence H Vacancy ¹	Rep	Racine
	4 5	Johnson, Glen D *Monroney, A S Mike	Dem	Oklahoma City		3	*Stevenson, William H	Rep	La Crosse
	6	Morris, Toby Peden, Preston E		Lawton Altus		4 5	Brophy, John C Kersten, Charles J *Keefe, Frank B	Rep Rep	Milwaukee Milwaukee
_	8	*Rizley, Ross	Rep	Guymon		6 7	*Keefe, Frank B	Rep Rep	Oshkosh Ogdensburg
Ore	1 2	Norblad, Walter *Stockman, Lowell	Rep Rep	Astoria Pendleton		8	*Murray, Reid F *Byrnes, John W *Hull, Merlin	Rep	Green Bay
	3	*Angell, Homer D	Rep Rep	Portland Roseburg		9 10	*O'Konski, Alvin E	Rep Rep	Black River Falls Mercer
Pa	4	*Ellsworth, Harris Gallagher, James McGarvey, Robert N	Rep	Philadelphia	Wyo		*Barrett, Frank A	Rep	Lusk
	2	McGarvey, Robert N Scott, Hardie		Philadelphia Philadelphia	1Vaca	ncy c	aused by the death of Robert K F	lenry, Nov 2	0, 1946
	4	Maloney, Franklin	Rep	Philadelphia Philadelphia	_				
	5 6	Sarbacher, George W, Jr Scott, Hugh D, Jr	Rep	Philadelphia	Cong	gres	ssional Legislation		
	7	Scott, Hugh D, Jr Chadwick, E Wallace		Moylan Allentown	S	ee L	AW, UNITED STATES.		
	8	*Gerlach, Charles L Dague, Paul B	Rep	Downingtown					
	10 11	Scoblick, James P Jenkins, Mitchell		Archbald Trucksville	Cong	ares	ss of Industrial Orga	ınizatio	ns
	12	Fenton, Ivor D	Rep	Mahanoy City			LABOUR UNIONS, SOCIET		
	13 14	Muhlenberg Frederick A *Gillette, Wilson D	Rep	Wernersville Towanda			ES AND LOCK OUTS.		•
			Rep	Woolrich Penn Wynne					
	16 17	*Rich, Robert F *McConnell, Samuel K *Simpson, Richard M *Kunkel, John C *Gavin, Leon H *Walter Francis E *Gross, Chester H Van Zandt James E Cross, William I	Rep	Huntingdon	Coni	nak	nam, Sir Arthur		
	18 19	*Kunkel, John C		Harrisburg Oil City		_		\ 1D	tich air officer
	20	*Walter Francis E	Dem	Easton			rthur Coningham (1895–		tish air officer,
	21 22 23	*Gross, Chester H Van Zandt James E	Rep	Manchester Altoona	was b	OLII	Jan 19, 1895, in Brisbar	ic, Austra	na vvnen ne
			Rep	Uniontown Fredericktown			, his parents moved to I		
	24 25	*Morgan, Thomas E *Graham, Louis E		Beaver	was e	auca	ited at Wellington colleg	ge and Vi	ctoria college
	-	•							

State Dist

Congressional Legislation

Congress of Industrial Organizations

Coningham, Sir Arthur

He joined the New Zealand army in 1914, serving in Samoa and later in Egypt. Although invalided out of the dominion army in 1916, he recovered and joined the royal flying corps the same year. Shot down twice in action and once wounded, he was awarded the D.F.C. in 1919 and was given a permanent commission in the R.A.F. In 1925, Sir Arthur led a 5,600-mi. flight from Cairo across the North African desert and Chad territory to Kano in Nigeria and was awarded the Air Force cross for this achievement. Just before the start of World War II in 1939, Coningham was an air commodore in command of a bomber group. In 1941, he was assigned to the middle east armies with the rank of air vice-marshal. During the Allied offensive in Africa, Coningham (who later became an air marshal) commanded the northwest African tactical air force and gave air support to the British 8th army in its successful offensive against axis troops in Libya. He also participated in the Allied drive in Tunisia, serving under Gen. Eisenhower. On Jan. 25, 1944, he was selected as commander of the 2nd tactical air force of the R.A.F. for the invasion of western Europe. On Jan. 1, 1946, he was made a knight commander of the Order of the British Empire.

Conjunctivitis

See Eye, DISEASES OF.

Connally, Thomas Terry

Connally (1877-), U.S. senator, was born Aug. 19, 1877, in McLennan county, Tex. He was graduated in 1896 from Baylor university and received his law degree from the University of Texas two years later. In 1917 he was elected to the U.S. house of representatives, but resigned to become a captain in an infantry brigade.

He later returned to congress, serving until 1928, when he was elected to the U.S. senate.

In contrast with his occasional opposition to President Roosevelt on domestic issues was his whole-hearted support of the administration's foreign policy. Before Pearl Harbor, he had stated that the U.S. should maintain a "policy of resistance" to the conquest of the democracies by the dictators. He voted for repeal of the arms embargo, the lend-lease act and the selective service law. He became chairman of the senate's foreign relations committee in the summer of 1941, and thereafter devoted most of his energies to supporting Roosevelt's war program.

Connally was one of the U.S. delegates to the U.N. conference in San Francisco in April-June, 1945. After congress had passed the U.N. participation bill (Dec. 19, 1945), Connally was named by President Truman as member of the U.S. delegation to the U.N. general assembly sessions in London which opened on Jan. 10, 1946.

He was again appointed, July 18, 1946, as a member of the U.S. delegation to the U.N. and on Aug. 2, he was appointed to the Joint Congressional Committee on Atomic Energy. Connally was re-elected to the senate in the election of Nov. 5, 1946.

Connecticut

One of the 13 original states, Connecticut is the most southwesterly of the New England states and popularly known as the "Nutmeg state," the "Land of Steady Habits," or the "Constitution state." In size, it ranks 46th among the states with an area of 5,009 sq.mi. (including

110 sq.mi. of water). The population (1940) was 1,709,242, of which 67.8% or 1,158,162 were urban. In 1940 there were 1,675,407 whites; 32,992 Negroes; 1,347,466 native born; 327,941 foreign born. Capital, Hartford (166,267). Other cities with 1940 population figures: New Haven (160,605); Bridgeport (147,121); Waterbury (99,314); New Britain (68,685); Stamford (47,938).

The principal state officers for the 1937-39 term were: governor, Wilbur L. Cross; lieutenant governor, T. Frank Hayes; secretary of state, C. John Satti. The most important legislation of 1937 was a series of acts reorganizing the central administration of the state. These acts included the establishment of committees on inter-governmental cooperation, a legislative council, and a governor's council, whose powers included certain functions in the interim between legislative sessions; of the department of finance and control; of the personnel department of the state's civil service; of the department of public works; and of the department of welfare and the public welfare council.

State officers elected in Nov. 1938 (to take office in Jan. 1939) were Raymond E. Baldwin, governor; James L. McConaughy, lieutenant governor; Mrs. Sara B. Crawford (the first woman elected to a state office), secretary of state. The new legislature, which was not in session in 1938, consisted of: Senate, 16 Republicans, 17 Democrats, 2 Socialists; House, 202 Republicans, 63 Democrats, 2 Socialists.

New legislation in 1939 included reform of the minor court system, together with a proposed constitutional amendment to alter the appointment of the judges for those courts; revision of statutes concerning foods, drugs, and cosmetics to harmonize with federal regulations; provision for alternate jurors in civil and criminal cases; requirement of uniform audit of town and municipal accounts; an anti-injunction law; and significant modification of social security, labour and liquor laws.

State officers elected in 1940 were the following: governor, Robert A. Hurley (Democrat, with 388,361 votes to 374,581 for Baldwin, Republican, and 18,090 for McLevy, Socialist); lieutenant governor, Odell Shephard; secretary of state, Mrs. Chase Going Woodhouse. The presidential vote in the state in 1940 was Roosevelt, 417,621; Willkie, 361,825. Francis T. Maloney, Democrat, was re-elected United States senator.

The 1941 legislature consisted of 22 Democrats, 13 Republicans in the senate; 88 Democrats, 184 Republicans in the house. A constitutional amendment was initiated to make legislative sessions annual instead of biennial. Another amendment called for an increase in the terms of elective officers to four years with elections in odd-numbered years. The common pleas courts was put on a state, instead of a local, basis and a state system of juvenile courts was created. A state council of defense was set up (Samuel H. Fisher, administrator) and the state was authorized to purchase land to be leased to the federal government for an army air base at Windsor Locks.

State officers elected in 1942 for the 1943-45 term were: governor, Raymond E. Baldwin (Republican, 281,362 votes, against Hurley, Democrat, 255,166, and McLevy, Socialist, 34.537); lieutenant governor, William Hadden; secretary of state, Mrs. Frances B. Redick.

The Republicans also won additional representation in both houses of the legislature, as follows: Senate, 22 Republicans, 14 Democrats; House, 201 Republicans, 71 Democrats.

(G. M. Du.; X.)

Connecticut tobacco workers erecting screens to protect a field of shade-grown tobacco. This commodity continued to be the leading agricultural product of the state between 1937 and 1946



Important measures taken by the 1943 legislative session were: the governor was empowered to suspend or modify laws conflicting with the war effort; the public works department was abolished and most of its duties transferred to the comptroller; a postwar planning commission was established; the commission on forests and wildlife allotted \$400,000 to purchase land; maximum payments for workmen's compensation were increased from \$25 to \$30 per week; and the state defense council was replaced by a war council with greater powers.

In the state election of 1944, state officers chosen for 1945 were: governor, Raymond E. Baldwin (Rep.); lieutenant governor, Wilbert Snow (Dem.); secretary of state, Charles J. Prestia (Dem.); treasurer, William T. Carroll (Dem.); comptroller, John M. Dowe (Dem.); attorney general, Francis A. Pallotti (Rep.). The Democrats gained control of the state senate by electing 21 seats out of 36: the house remained strongly Republican with 195 members to the Democrats' 77. Two special sessions were called during the year, the first, to amend the act regarding absentee voting and to extend the governor's wartime powers; the second, to again amend the voting law to conform to the Federal War Ballot act.

In the presidential elections a record number of votes

Table 1.—Education (Public)							
	1938	1940	1941 (1961) 1941	c) 1942	1944	1945	
Elementary pupils	. 214,545	187,482	184,388	171,612	169,612	165,551	
High school pupils Elementary school	. 80,971	102,998		97,718	79,366	77,951	
teachers	6,207 3,384	5,807	5,395	5,205	5,465	5,111	
High school teachers	3,364	2,926	2,948	3,911	3,069	3,354	
			blic Welfar	-			
	•	-	ousands of	•			
Cases on general re		38 194 321 1 <i>7,</i> 8			1943	1945	
Cost of general reli	ef \$		52 \$22				
Recipients of old-ag	15,	268 17,1				13,878	
Cost of old-age per Blind receiving aid		407 \$4 201 2	61 \$48 46 23	7 \$516 3 189		180	
Dependent children receiving aid	3.	300 3.3	00 2,95	0 6,146	6,835	7,140	
	•	•	•		, 0,000	.,	
	Ta		mmunicatio				
State highway mile		1938 • 2,793		1941 19 2,863 2,8	42 1943 190 2.911		
Railroad mileage .		904	904		12 873		
	Table	V.—Bank	ing and Fin	ance			
			nousands of				
	1937	1939	1941	1943	1944	1945	
State revenue State expenditure Number of banks .	\$58,827 \$45,918 196	73,279 \$ 46,984 \$ 207		03,097 \$ 73,636 \$ 187	126,973 128,531 186	\$126,365 \$126,114 186	
Table V.—Agriculture							
			in thousand	s)			
	1937	1939	1940	1941	1942	1943	
Apples, bu	1,670 1,989	1,365 1,950	1,210 1,960	1,412 1,974	1,992	(est.) 858	
Corn, bu. Hay, short tons	484	412	484	403	2,058	2,080	
Potatoes, bu Tobacco, ib	2,890 22,240	3,238 25,116	3,402 23,321	2,862 23,370	2,942 18,577	3,376 23,000	
Income from crops and stock	\$54,000	\$55,241	\$55,441		\$75,075	\$106,017	
_		all VI			•		
-			Manufacturii housands of				
•	1935	1937	1939	1942	1943	1944	
		262,620	233,525	491,00	0 544,611		
Wages paid . \$2 Value of products \$8		312 , 270 261 , 789 \$	\$276,274 1,229,586	\$2,000,00	0		
	Table VII.—Mineral Production						
			ousands of c				
			193	•	3 1939	1943	
Total value of pro- Stone Clay	ducts		. \$67,3 . 1,8	39 \$3,06 60 1,73	0 \$4,30	5 \$4,835 7 1,392	
1 "			•		.,_0,	550	

were cast. The result gave President Roosevelt 435,146 votes and Governor Dewey 390,527.

Legislation enacted in 1945 included: increase of the Soldiers', Sailors' and Marines' fund from \$2,500,000 to \$15,000,000, by increasing the cigarette tax from 2 to 3 cents per package; appropriation of \$750,000 for an armoury at Bridgeport; appropriation of \$2,000,000 for state school building grants to towns, with a limit of \$50,000 in any one grant; reduction from 52 to 48 hours in the maximum work week for women in certain industries; directing the Public Welfare council to make a study of juvenile delinquency; establishment of a board to administer a labour relations act, guaranteeing the rights of collective bargaining to workers engaged in intrastate industries. William C. Hadden (Rep.) replaced Francis A. Pallotti (Rep.) as state attorney general.

The election of Nov. 1946 resulted in a Republican landslide. A complete Republican state ticket, including U.S. senator, governor, lieutenant governor, secretary of the state, treasurer, comptroller and all six congressmen was elected. In addition, Republicans gained control of the general assembly by electing 28 senators to the Democrats' 8, and by electing 231 Republicans in the house to the Democrats' 41. (J. Br.)

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Conscientious Objectors

See PACIFISM.

Conscription

See Compulsory Service, British; Selective Service, U.S.

Conservation, Soil

See Soil Erosion and Soil Conservation.

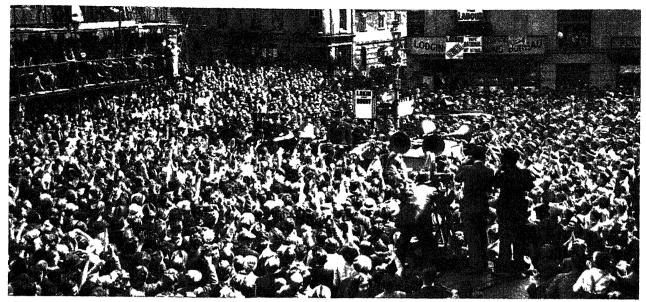
Conservation Corps, Civilian

See Civilian Conservation Corps.

Conservative Party, Great Britain

The history of the British Conservative party during the years 1937-46 was intertwined with historic events. The closing years of the 1930s were dominated by the shadow of the impending European tragedy. The great hopes placed in the League of Nations had failed to come true. Germany's determination both to redress the balance fashioned at Versailles and to dominate the continent were becoming evident. The year 1937, in which Stanley Baldwin retired from the premiership and was succeeded by Neville Chamberlain, also saw the beginning of the Sino-Japanese War in the far east.

With Germany, Italy and Japan outside the league, with the United States still following a policy of non-intervention and the U.S.S.R. preoccupied with an internal purge, little was left of collective security. There remained the hopes of dual security provided by France and Great Britain. This was the situation that faced Chamberlain on his accession to the premiership in the summer of 1937. In the face of the gathering storm a condition precedent to a successful British foreign policy was a large measure of unity between government and opposition. Unfortunately this was not achieved. The Labour party, while demanding a firm policy toward the axis powers,



The Conservative electoral campaign of 1945 was led by Winston Churchill, here shown addressing a rally at Rugby, England

made its support of the government's rearmament program contingent upon the adoption of a foreign policy based on collective security.

Chamberlain considered it his supreme duty to preserve world peace, and his whole policy was directed toward that end. Surveying the material devastation and moral deterioration caused by World War II, one would find it hard to argue that every possible attempt should not have been made to prevent war. Whatever judgment history might pass on Chamberlain's policy the country was convinced by Sept. 1939 that everything humanly possible had been done to reach agreement, and when the government was compelled to declare war it did so in the knowledge that it was backed by a united people. That moral unity was largely due to Chamberlain's untiring efforts.

The history of the party during the next five years was bound up with the war effort of the British people. At first unaided, then as partners in a great national (i.e., coalition) government, the Conservative majority in the house of commons was responsible for sustaining the morale both of government and people. Party propaganda was discontinued, the electoral truce was faithfully kept and the party organization drastically reduced. Speaking at a party meeting on March 10, 1942, Winston Churchill, who had succeeded Chamberlain as leader of the party in Dec. 1940, said: "They (the party) strove for peace too long, but when war came they proved themselves the main part of the rock on which the salvation of Britain was founded and the freedom of mankind regained." Prominent Conservatives were put in charge of many of the great departments of state: Anthony Eden was foreign secretary; Sir Kingsley Wood, chancellor of the exchequer until his death in 1942; Oliver Lyttelton, minister of production; Lord Woolton, who became chairman of the party in 1946, minister of food and later minister of reconstruction; R. S. Hudson, minister of agriculture; Oliver Stanley, secretary of state for the colonies; L. S. Amery, secretary of state for India; and Lord Cranborne, secretary of state for the dominions.

Other Conservatives were primarily responsible for the schemes of social reform which in its later stages the coalition government successfully brought to fruition. The Education act of 1944 was drafted and passed through

parliament under the direction of a Conservative minister of education, R. A. Butler. The Town and Country Planning act of 1945 was also the work of a Conservative, W. S. Morrison. Other White Papers for which Conservatives were primarily responsible were those on a national health service and on civil aviation, the ministers concerned being H. U. Willink and Lord Swinton. As members of the coalition, the leaders of the Conservative party pledged themselves to and took their full share in preparing the White Paper on full employment and the comprehensive scheme of social insurance which was later placed on the statute book.

In Feb. 1943 a Tory reform committee was founded in order to encourage the government in its own words, "to take constructive action on the lines of the Beveridge scheme of social insurance." Believing in the need for social reform, the committee advocated a policy, historically traceable to Disraeli's "Young England" movement, of Tory democracy. It emphasized the need for national unity, both in foreign and domestic affairs, and before the general election of 1945 published a substantial amount of literature on various aspects of domestic reconstruction. The movement met with both criticism and approval. Some regarded it as a necessary revival of Toryism's progressive instincts, while others criticized it for attempting to outplay the Labour party on its own ground.

With the approaching end of World War II the necessity for an appeal to the electorate became increasingly felt, although electorally speaking the party was still disarmed. Churchill, having failed to retain the services of the Labour and Liberal parties in the coalition government, resigned on May 23, 1945, and formed a transitional government almost exclusively Conservative in character. Parliament was dissolved in June. The pre-election polemics and the campaign itself aroused a political bitterness sadly out of harmony with the unity so successfully attained during the years of World War II. The Conservative party stressed the importance of retaining Churchill as prime minister both to help finish off the Japanese war and to lay the foundations of peace. In a manifesto to the electorate Churchill outlined a massive social reform program including full employment with the greatest possible encouragement of private enterprise, an all-out housing drive providing for the completion of 220,000 permanent houses during the first 2 years after World War

II, with another 80,000 on the way, proposals for dealing with land problems (compensation and betterment), agriculture, national insurance and health services. State supervision of monopolies, the progressive removal of controls, encouragement for the small business man and the technical reorganization of the coal mining industry were also promised.

Defeated at the polls, the Conservative party had both to build up an organization and to decide on a line of policy. It attacked the Labour government during the latter's first year of office for neglecting the essential needs of the people through its concentration on nationalization schemes. On the other hand, it supported and welcomed the government's production drive, while defending the merits of private enterprise. In the field of foreign policy the Conservative party supported Foreign Secretary Ernest Bevin although it deplored the handling of the negotiations with Egypt during 1946.

The concept of a "property-owning democracy" enunciated by Churchill in a speech at Edinburgh on April 29, 1946, revealed the goal towards which the party was moving. (See also Parliament, Houses of.)

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(R. A. Br.)

Constitutional Law

See LAW.

Construction Battalions, U.S. Naval

See SEABEES.

Consumer Credit

The years 1937-46 were the most decisive in the history of U.S. consumer credit. A number of factors combined to test consumer credit and to qualify its force as an economic factor. Practically every economic phenomenon was compressed into that period. The world passed through a business recession, a transitional period in which nations armed for defense, a war period which brought extensive governmental regulations of credit policy and the beginning of the postwar boom.

The first year of this period, 1937, was normal in the sense that the effects of the 1929 economic depression had been largely overcome. A business survey covering more than 20,000 retail stores and conducted by the National Retail Credit Assn. (an organization composed of credit granters and devoted to the problems of credit research and sound credit policy) indicated that the first 9 mo. of 1937 were marked by a steadily rising volume of consumer credit outstanding, including both instalment and charge-account credit.¹

This stable, or expanding, period of credit continued until Nov. 1937. Beginning with that month and continuing through the entire year of 1938, each month's credit outstanding showed a decline from the comparable month in the previous year. The consensus of opinion was that this decline was primarily the result of unemployment in the manufacturing centres and a general industrial and

economic tension arising out of unsettled world conditions

In Jan. 1939 the downward trend in consumer credit volume was checked. That year showed a slow, but steady, rise in the volume of consumer credit. During 1940 this rise accelerated rapidly. The sudden rise in credit volume was attributed to the fact that the entire United States, in contrast to the rest of the world, was producing tremendous quantities of durable, expensive merchandise, the type ordinarily bought on the instalment plan. Full production and consequent full employment were the rule. These conditions gave rise to an unprecedented demand for consumer goods, a demand that could not be met out of current income.

At the close of 1941 the consumer credit outstanding in the U.S. reached an all-time high of \$9,889,000,000. When the United States entered World War II on Dec. 8, 1941, this large volume of credit outstanding was viewed with alarm by governmental leaders. It was felt that uncontrolled credit buying would be dangerous since there were several inflationary pressures already in operation. As the country's facilities were converted to war production, the quantity of durable goods available for purchase diminished. The cash income of all groups was at a high level. The extensive use of credit at this time would have contributed to the inflationary trend since credit makes it possible for the consumer to concentrate his demand at a given instant. Since most workers could look forward to rising wages and salaries, a large purchasing demand was created with the possible consequence that unlimited credit privileges would result in inflation. This pressure was curbed in Sept. 1941, by Regulation W.

Regulation W, in broad outline, proposed that all charge accounts should be paid within less than 60 days from the date of their origin and that instalment credits should have a maturity of not more than 12 mo. The act further provided that for all instalment purchases (and loans to make such purchases) a down payment of one-third of the total amount had to be obtained. With the introduction of Regulation W the volume of consumer credit outstanding began to drop rapidly. In 1942 it decreased more than \$3,000,000,000, leaving a total of only \$6,485,000,000 at the close of that year.

Governmental regulations could not, however, be considered as the major factor in the decline of consumer credit in the U.S. The figures cited simply followed the pattern noted throughout other countries engaged in World War II. By the early part of 1942 the U.S. industrial economy had been geared almost wholly to wartime production. Those items normally purchased on credit—that is, durable goods such as electrical appliances, expensive home furnishings and automobiles—were simply not available. Moreover, income of all groups was high in comparison with that of previous years. The large amount of readily available cash eliminated much of the need for credit since most of the goods available were of the non-durable and relatively inexpensive type.

It should be pointed out that the decline in credit outstanding was further affected through customers' liquidating a considerable number of their accounts that had been outstanding for some time. While credit sales declined, collection percentages rose. These two factors—(1) the liquidation of old accounts and (2) the opening of relatively few new accounts—combined to drive credit outstanding down to a total of \$5,000,000,000 in the latter part of 1943. This marked the low point in the decade.

In the early part of 1944 credit began to rise from this low. Higher prices and increased demand caused people

^{**}Instalment* credit refers to a purchase agreement, the terms of which are agreed upon by the purchaser and the seller. The contract is liquidated in accordance with this agreement. Charge account credit refers to the system whereby outstanding balances are paid in full at the end of a given period, normally the tenth of the month following the date of purchase.

to turn to credit again. For 19 mo., from July 1944 to the early part of 1946, consumer credit outstanding increased about \$550,000,000 per year. At the end of hostilities with Japan on Aug. 14, 1945, the upswing in credit gained momentum and after Jan. 1946 became phenomenal. Consumer credit outstanding rose more rapidly in the latter part of 1946 than in any other period during the 16 years for which official Federal Reserve board figures were available. The all-time high of \$10,000,000,000 was surpassed by Dec. 1946.

This rise and fall of consumer credit outstanding was not unattended by transformations in retail credit policies during the ten years. Its virtual disappearance from the economic scene as the usual way of doing business necessitated a reversal of established procedures. Cash buying became the rule.

The system of doing business on credit was well established throughout the world at the outbreak of World War II. Many firms did as much as 60% of their total volume of business through the means of instalment or charge-account sales. Three factors brought into the picture with the war reversed the trend toward credit buying: (1) The diversion of productive effort into the manufacture of war materials reduced the volume of available consumer goods. (2) Complex and restrictive systems of rationing of scarce items were introduced into almost all countries. (3) Full employment and great quantities of cash in circulation, particularly in the United States, routed credit for a time from its established position as a significant economic factor.

Inquiries for U.S. credit information decreased as a result of the lack of new charge-account business. The dislocation of the population because of service in the armed forces and migration to other sections of the country to seek new employment opportunities made much credit information valueless in the locality in which it rested. It was only through the system of interchange of information developed by the Associated Credit Bureaus of America and other organizations like it, that the machinery for checking the consumer's credit was kept intact.

With the end of the war with Japan, U. S. credit managers were faced with the problem of regaining lost chargeaccount business. There was a concerted rush on the part of retailers for this potential buying force. Retailers awoke to the fact that their old charge-account customers had converted to the practice of buying for cash, and no new accounts had been added. Aggressive sales promotion designed to recapture credit customers was begun. A typical example was the practice of department stores to restrict the sale of nylon hosiery (a scarce commodity much in demand) to those customers who had charge accounts with the organization. Other scarce merchandise was offered similarly as an inducement to get new credit business. An indication of the effectiveness of these promotions was the fact that the demand for credit reports from the various credit bureaus increased from 100% to 200% in 1946 as compared with 1941. In certain metropolitan areas, thousands of new credit customers were added during a single promotional activity. Retailing was attempting to replace all those accounts that had fallen by the way during the years of World War II. With the gradual reappearance of consumer goods, retailers realized that credit sales had to account for a considerable portion of future volume. Available figures indicated that this reasoning was sound. According to the Federal Reserve board figures for Sept. 1946, the accumulated savings in the United States amounted to \$130,000,000,000; but 50% of the families in the lower-income bracket owned roughly only 3% of those savings, or less than \$4,000,000,000. It was estimated that 20% of the families in the U.S. had no savings at all.

It was obvious, therefore, that great volumes of credit had to be extended if distribution were to continue high. The general credit picture at the latter part of 1946 found business organizing to continue the expansion of credit facilities along sound lines. By the end of 1946, the credit-reporting machinery of the nation was operating at capacity but was generally able to supply the needs of credit granters. The frenzied initial promotions designed to accumulate large numbers of credit customers at once were being discontinued. A stable trend pointing the way toward continuing credit expansion became evident, assisted by the limitations of the selling market itself. Many heavy consumer goods had not yet made their reappearance in the consumer market. Automobiles, normally responsible for the greatest dollar volume of any single production in the U.S., were still not available in sufficient quantities to satisfy the demand.

Banks and other financial institutions were taking cognizance of the expanding demand for credit by aggressively entering the field and seeking consumer credit business. Service organizations, such as transportation companies, were granting credit extensively. A tendency was noted on the part of labour and industrial organizations to finance credit dealings of members and employees. More than 400,000 new businesses were organized between 1944 and 1946, and many of these new firms were actively pushing credit sales. (See also Federal Reserve System.)

Great Britain.—Although in 1937 the possibility of war was casting its shadow over the trading community, instalment buying in Great Britain was still making progress and figures continued to rise steadily until 1939. The system had by that time been firmly established as an essential aid to production and distribution. Prejudices against it had been gradually broken down, and the participation of the Bank of England in United Dominions trust put on it the hallmark of complete respectability. No longer was it felt that there was something undesirable about consumer credit, and manufacturers of motorcars, radio sets, refrigerators, etc., took considerable pains to see that their selling organizations were adequately backed by instalment plans so that the products of the factories were available to every member of the community. It became accepted that by using credit people were not "mortgaging their future income," and the regularity of payments and the comparative infrequency of default indicated that people were taking careful stock of their commitments and were not rushing into obligations which they could not see their way to fulfill. The Hire Purchase act of 1938, giving the first statutory recognition of hire purchase, was an indication that the government was interested in the matter. Abuses were so few, however, that the value of the act need not be overrated.

In 1939 the complete cessation of the manufacture of consumption articles brought an end to consumer credit. Furthermore, the board of trade, in its zeal to arrest spending and encourage savings, restricted hire purchase in respect of some goods by controlling rates and methods of handling and prohibited it altogether in respect of other goods except those without profit to the seller. Companies whose business it had been to finance this type of credit had to turn to other forms of business. There was a considerable amount of contractors' plants for war

purposes coming on to the market and machine tools were in great demand; consequently, the resources of some companies were utilized in financing this. Some concerns found their way into actual trading, while one company in particular sought new fields of finance which would have a considerable effect on its postwar activities.

The maintenance of controls after the end of World War II, the shortage of labour and material and the insistence on manufacturing largely for export had not in 1946 provided much in the way of goods for the operation of consumer credit. Whatever goods were available were readily acquired for cash, but with increasing production credit would again be required if the total production of the factories was to be disposed of, and with the rise of the cost of goods consumer credit was likely to make an appeal to a large number of purchasers who previously had no reason to find use for it.

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Contact Lenses

See Eye, DISEASES OF.

Contract Bridge

The years 1937–46 saw a notable advance in contract bridge in the all-important phase of standardization.

Whereas in 1937 a great many different "systems" were in vogue throughout the United States (and many others throughout the world), the end of 1946 found few differences in the style of bridge played in such widely separated communities as California and Maine, or Florida and Oregon.

Since contract was still comparatively young in the United States in 1937, it was inevitable that the best players should still be experimenting at that time, with a view to determining which bidding methods would give the best results. One of these experiments was codified into a system known as the Sims system, after its author Hal A. Sims, who had achieved prominence as the captain of a highly successful tournament team known in the early 1930s as the "Four Horsemen." The Sims system prescribed strong honour-trick requirements for opening bids in first and second hand positions, with the corollary that third and fourth hands had to open the bidding with far less than the traditional 21/2 honour-tricks. This latter technique was of course designed as "protection" for first and second hands who might have, in the interest of alleged strategy, passed game-going material. This system, known widely as the "protection system," was carried to extremes never dreamed of by its progenitor. Especially in New York city, the hub of contract bridge, many nationally known experts, particularly of the younger generations, went to the length of passing hands with as many as four honour-tricks in first or second positions and requiring their partners to open the bidding on as little as 1/2 honour-trick!

Needless to say, this fantastic system could not enjoy long life, since its results were scarcely comparable with those achieved by more orthodox methods. A concomitant of the protection system was the fad for "powerhouse" notrumps. A school of bidding held that the most effective one-notrump opening was on hands containing as many as six or even more honour-tricks, and naturally, when this grotesque approach was used, the partner was obligated

to respond even though he held a worthless hand. The basic philosophy behind this powerhouse notrump was the wishful thinking that any opponent unwary enough to overcall could be doubled and penalized crushingly; but, not unnaturally, as soon as the opponents became aware that a powerhouse notrump was being used against them, they substituted discretion for valour and stayed out of the bidding entirely, leaving the notrumper and his bewildered partner to their own devices.

The protection system and the powerhouse notrump disappeared from the bridge scene at about the same time—in 1937 and 1938. Another casualty was the psychic bid, which had been a phenomenon of the preceding five or six years. Psychic bids of various descriptions had struck the imagination of millions of players who, reared on the great American game of poker, with its indispensable phase of bluffing, fancied that these same bluff tactics could be applied successfully to bridge. Here, too, it was the gradual education of the rank and file of players which sounded the death knell of a fad. Standard methods of combating psychics were created and widely disseminated; after that the habitual psychic bidder found that his occasional successes could not begin to pay for his numerous losses.

Contrary to the fate of the protection system and the powerhouse notrump, however, psychic bidding did not disappear entirely; even at the end of 1946 master players still employed bluff bids; but where these were common ten years before, they were now extremely rare.

In the latter part of the 1930s, a new bridge galaxy known as the "Four Aces" (Howard Schenken, David Burnstine, Oswald Jacoby and Michael T. Gottlieb) rose to prominence through great success in tournament play and through the publication of a book describing their system. In substance this system differed little from the Culbertson system, which, throughout the years and during the decade, remained the overwhelming favourite of U.S. and foreign players. The most notable difference between the systems was the "point count" employed by the Four Aces to estimate notrump potentialities, as against the honour-trick count of the Culbertson system for all bids, notrump as well as suit openings, overcalls and raises. As both systems were refined throughout the years they came closer and closer together until, at the end of 1946, there was no material difference in any phase.

Some of the few changes in the Culbertson system were made in 1936 and 1937. One of these was the discontinuance of the so-called "S.O.S. redouble." Up to that time, if the bidding had proceeded:

South	West	North	East
1 spade Redouble	Double	Pass	Pass
Redouble			

South's intention, by redoubling, was to force a rescue from his partner—hence the descriptive title "S.O.S. redouble." It had been found, however, by long experience that the call for a rescue led to greater disaster than for South to stay at one-spade doubled, and for this and many other reasons the Culbertson system decreed that thereafter any redouble should be for "business," not for a rescue.

Another change in the Culbertson system was in the scope of one-over-one bidding. Theretofore, in such a sequence as:

	South	West	North	East
1	diamond	Pass	ı heart	Pass
1	snade			

the one-spade bid by South, being one-over-one vis-a-vis North's heart response, was an absolute force. It had been

found that this interpretation was neither flexible nor necessary, and therefore the forcing principle of one-overone bids was confined strictly to the first round, *i.e.*, if South opened with one heart (for example) and North responded with one spade, South was obliged to bid again; but now that the first round had been completed, further forcing had to be employed by means of jump bidding.

Requirements for original notrump bids in the Culbertson system were reduced from 4 to 5 honour-tricks to the more usable requirements of 31/2 to 4 honour-tricks.

In the field of slam bidding, the Blackwood convention gained enormous popular acceptance and was incorporated into the Culbertson system with acknowledgment to the inventor of the convention, Easley M. Blackwood of Indianapolis, Ind.

It was probably the simplicity of the Blackwood convention that so popularized it throughout the bridge-playing world. The convention, in its essential phase, is as follows:

When, during the auction, after a suit has been bid by either partner, if either partner then bids four notrump, he demands that the other name the number of aces that he may hold by responding according to this table:

To show no aces, responder bids fives clubs.
To show one ace, responder bids five diamonds.
To show two aces, responder bids five hearts.
To show three aces, responder bids five spades.
To show all four aces, responder bids five notrump.

After the four-notrump bidder has discovered the number of aces opposite him, he can then make the same investigation for kings, by bidding five notrump (except in the rare event, of course, that partner's previous response has been five notrump.) Responder then announces his kings according to the same table of suits in ascending rank.

Paradoxically, this slam convention, though not as efficient or explicit as the "asking bids" that had been a part of the Culbertson system, supplanted not only those slam devices but also, to a lesser extent, the numerous other conventions in this field of bidding.

In other phases of bridge there were few innovations. However, a school of master players in New York devised and experimented with the so-called "weak two-bid." Traditionally, an opening two-bid in a suit had always been reserved for extremely powerful hands, containing game-going characteristics regardless of partner's support. In the weak two-bid, honour-trick requirements were slashed and the forcing-to-game nature of the bid was dropped. The adherents of this short-lived system held that it was worthwhile to abandon the advantages of the traditional two-bid for the advantage of forcing the opponents to enter the auction, if they did enter, at the higher levels, thus laying themselves open to penalty doubles. In this weak two-bid system only the bid of two clubs was reserved for enormous hands, not necessarily containing a club suit. This being an artificial bid, a series of artificial responses was required; and it was soon found, as in the case of all artificial systems, that the results did not justify the means. Thus, after approximately 20 years of contract bridge, it had been found that the forcing two-bid, the original cornerstone of the Culbertson system, was still the best device for the successful handling of superstrong holdings.

It was also found, after these 20 years, that no other card game had so much as threatened the supremacy of contract bridge. Even throughout World War II, contract bridge flourished and gained tens of thousands of new adherents. Entries in tournaments conducted throughout

the country increased steadily, until in 1946 all previous records were toppled. The game's popularity in general was undoubtedly due to the aforementioned standardization

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Contract Settlement, Office of

See WAR AND DEFENSE AGENCIES.

Contract Terminations

See WAR PRODUCTION.

Controlled Materials Plan

See WAR PRODUCTION.

Convoys

See Submarine Warfare.

Co-operative Movement

The world-wide co-operative movement underwent many changes during the years 1937-46. In Germany and in the countries overrun by the nazis the movement was not destroyed but was brought under nazi control. In general the peasant co-operatives were preserved and used as agents for the production and marketing of food, whereas the consumers' stores were discouraged and in some cases closed, and many of the factories and wholesale agencies owned by them were wholly or partly liquidated and handed over to private firms.

After the liberation these European movements were rapidly rebuilt, but the process of getting them back into full working order was bound to take a considerable time.

In Great Britain, the consumers' co-operative movement made steady, though not sensational, advances. It had in 1946 between 9,000,000 and 10,000,000 members, or approaching a quarter of the total population of all ages, and it played a large part in the working of food distribution under rationing. It also built up considerable reserves of capital, and the local societies showed a tendency after World War II to launch out on new ventures, including the purchase or establishment of large, central department stores, pharmacies, hotels and restaurants, theatres and motion picture houses. Its most rapid growth was in the retail trade in milk and coal.

The wholesale societies also widened their range and were interesting themselves increasingly in travel agency, house-building and the extension of manufacturing activities. The much smaller producers' co-operative societies pursued an uneventful, but on the whole successful, course; and there was some expansion of agricultural co-operation. The agricultural societies were engaged in 1946 in forming a new federation of their own, independent of the National Farmers' union, which previously had dealt with general issues affecting them.

The British co-operative party had a big success at the general election of 1945, raising its representation in parliament from 9 to 23. It negotiated after the election a new agreement for closer working with the Labour party, to which its parliamentary representatives belonged.

In America there were considerable developments of both consumers' and agricultural co-operation, though the movement throughout the American continents was still in its infancy, except for the well-established co-

operatives among the grain growers in Canada which were marketing more than one-quarter of the total crop. In Canada there was a spread of co-operative credit societies in the eastern provinces.

In the United States the decade was a period of widely diversified experiment. In 1937 there were well-grounded farmers' co-operatives, principally for marketing; but consumers' co-operation was almost unknown until the years of depression. By 1946 there had come into being not only a considerable number of consumers' stores, but also co-operative restaurants, gasoline stations, insurance companies, theatres, medical societies and many other experiments. (See below.)

În Latin America co-operation was strongest in Mexico and in Argentina. In Mexico the movement received strong encouragement from the government. In 1941, there were 761 consumers' societies, with 57,000 members, and 1,006 producers' societies, mainly in farming, with 33,000 members. These included a number of collective farms. In Argentina the consumers' society was the most strongly developed type; but there were also numerous agricultural societies, including especially dairies and produce-marketing societies, the total membership in 1946 being about 500,000. Peru, Bolivia, Chile, Colombia, Uruguay and Brazil had also substantial co-operative movements; and these had been growing fairly fast. They were largely but not exclusively agricultural.

In Asia the most remarkable development was that of the Chinese industrial co-operatives, which played a very, important part in getting industries restarted in the areas beyond the limits of the Japanese conquest. The Chinese made great efforts in their retreat to take with them what industrial equipment they could; and much of this plant was restarted in co-operative factories and workshops, while other new enterprises, mostly on a small scale, were set up under co-operative control. In India the peasant organization attached to the National Congress had been active in extending co-operative activity; but development was patchy. The movement was strongest in the Punjab, where it received steady government encouragement, especially for rural credit societies. Co-operation was strong in Ceylon, where there were consumers' societies on the big tea estates as well as credit and thrift agencies.

In Africa, co-operation remained weak, but efforts had been made to establish societies in Nigeria and the Gold Coast, and the colonial governments had given special encouragement to these ventures. The Union of South Africa had numerous agricultural marketing societies, and there was a spread of consumers' societies in the larger towns

In Australia and New Zealand, agricultural marketing societies were the predominant type. Almost all the production of butter and cheese in New Zealand was under co-operative control. In Australia the movement was strong in grain marketing, and consumers' co-operation had been spreading in the more populous parts of the country.

In Europe, the Scandinavian countries were in 1946 still the most strongly organized of all, in relation to population; and after the liberation of Denmark and Norway the activities of the joint trading organizations maintained by the co-operatives of the Scandinavian peoples were rebuilt and extended. In Poland agricultural co-operation had been powerful for a long time; and there, too, active reconstruction was in progress after the liberation. Czechoslovakia had a strong consumers'

movement, as well as many agricultural societies; and agricultural co-operation was developing fast in Yugoslavia. The U.S.S.R. still had the largest total co-operative membership of any country, even excluding the collective farms, which were in effect a form of agricultural co-operation. Consumers' co-operation in the U.S.S.R. had been confined since 1935 to the rural areas, the town stores having been taken over by the state trading organization.

The world body representing the co-operative movement was still the International Co-operative alliance, to which most of the national movements belonged. The I.C.A. was practically in abeyance during World War II, and had been cut off for some time previously from the national movements in Germany, Austria and Italy. It held its first postwar congress in 1946 and took an active part in helping the movements in the liberated countries back on their feet. Exact membership statistics in 1946 were still unobtainable for many countries.

An enquiry made by the International Labour organization reached the conclusion that on the eve of the war there were in the world about 800,000 co-operative societies of various types, with an aggregate membership of about 143,000,000. Of these, about 50,000 were consumers' societies, with nearly 60,000,000 members. More than 672,000 were agricultural societies, with 64,000,000 members; the rest were mainly industrial producers' societies, housing societies and co-operative credit agencies in the towns. Of the total members, upward of 60,000,000 were in the U.S.S.R. and about 53,000,000 in the rest of Europe. America and the rest of Asia each had between 14,000,000 and 15,000,000 co-operative members, and Oceania about 500,000. The totals were in all probability substantially larger, especially in the U.S.

The problems which were most under discussion among co-operators in 1946 included the methods to be adopted in order to promote "inter-trading" between the national movements and especially between those of the agricultural and industrial countries. Plans were on foot for developing a new international trading agency, perhaps based on the agency founded by the Scandinavian movements. There was also much discussion on the question of political attitudes, some co-operators favouring strict political neutrality, whereas others, such as the British, took part in politics, in close alliance with the Labour or Socialist parties of their nations.

On the whole, the trend in continental Europe was rather toward political neutrality; but this was less a matter of principle than a result of the sharp division between communists and social democrats in many European countries. Political affiliation with Labour or Socialist parties, where it existed, was mainly of the consumers' movements. The agricultural co-operatives nearly everywhere professed political neutrality, though some of them had fairly close links with peasant parties, especially in eastern Europe. (G. D. H. C.)

U.S. Consumer Co-operatives.—Consumer co-operatives in the United States made the greatest progress in their history during the decade 1937-46. This was true of all branches of the movement, but some branches of it made more progress than others.

The commodity co-operatives handling all kinds of commodities—foodstuffs, household goods, petroleum products and farm supplies—recorded a threefold growth in business and a great increase in membership. Volume of goods handled jumped from an estimated \$365,000,000 in 1936 to more than \$1,000,000,000 in 1946. Service co-operatives, also consumer-owned, made even more spec-

tacular progress. In this field were credit co-operatives or credit unions, housing co-operatives, co-operative health associations and hospitals, co-operative banks, insurance companies, utility or electric power co-operatives, student "co-ops," burial associations and other service organizations.

At the close of the decade, membership in the commodity co-operatives stood at more than 2,500,000 families. Service co-operatives had more than 5,000,000 memberowners. There was, however, considerable duplication of membership and as a result there were no dependable estimates of the net number of members of consumer co-operatives. Since each member was usually the head of a family, any net membership figure should be multiplied by four. The result would indicate that a good section of the U.S. people was associated with co-operatives.

Consumer co-operatives handled one-fifth of all the farm supplies purchased in the United States. The petroleum co-ops did 22% of the gas and oil business in the rural sections of the United States—a business of more than \$250,000,000 in 1945. More than 1,600 food stores served consumer-owners in about 35 states.

As business volume warranted, the co-ops moved into the field of production. By the end of the decade, co-operatives affiliated with National Co-operatives, Inc., owned and operated 158 mills, factories, refineries and other productive enterprises in the U.S. and Canada. At least 100 of these had been acquired after 1939.

Most spectacular development in consumer-owned cooperative production was in petroleum products. The first co-op refinery in the U.S. was built in 1939 and began operation Jan. 1, 1940. By the end of 1946, the co-ops owned and operated 10 oil refineries, 1,600 mi. of pipe line and 700 oil wells.

Other production enterprises included feed and seed mills and fertilizer factories, farm implement factories, chick hatcheries, paint factories and printing plants, lumber mills, coal mines; and in the food field, canneries, bakeries, creameries, bottling works, flour mills and coffeeroasting plants.

The largest central organization in the commodity field was National Co-operatives, Inc., with headquarters in Chicago, organized in 1933. In 1936 the wholesale business of its member associations was about \$30,000,000. At the close of 1946, it was owned by 22 regional co-operative associations with nearly 5,000 retail units in the U.S. and Canada. Wholesale business of these member associations was \$178,000,000 in 1945 and was estimated at more than \$200,000,000 in 1946. In addition to purchasing for its member associations, National Co-operatives owned a milking-machine factory, hot-water-heater factory, chemical-products plant and flour mill.

Largest organization in the co-operative service field was the Credit Union National Assn. with 3,500,000 members of 10,000 credit unions. Organized in 1934, C.U.N.A. moved its headquarters to Madison, Wis., early in the decade to be near the centre of the movement.

The rural electric co-operatives were nearly all organized during the decade. Pushed forward greatly by the creation of the Rural Electrification Admin. in 1935, the power co-ops by 1946 were bringing electric light and power to 1,250,000 U.S. farms. An embryo Co-operative Finance Assn. of America was organized in 1945. Co-operative insurance companies had no national organization but had nearly 1,000,000 policyholders.

During 1946 three new national organizations were formed—the Co-operative Health Federation of America; the National Co-operative-Mutual Housing associations and the North American Student Co-operative League. Six co-operative hospitals and a score of co-operative health associations were in operation. About 100 co-op housing projects were scattered throughout the country, and many more had plans drawn for construction as soon as building materials were available. Eight mutual ownership projects built by the government were being purchased by their tenants.

What might look to the outsider as a very complicated organization structure was beginning to take shape. Late in 1946, after 2 years of discussion, the 30-year old Cooperative League of the U.S.A. passed over to National Cooperatives its educational work for commodity co-operatives and "moved upstairs" to become a national federation of both commodity and service co-operatives. Closer co-ordination and integration, bringing added strength to the U.S. co-operatives, was a major project of the years ahead. (W. J. Cl.)

(See also Agriculture; Business Review.)

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Coordinator of Information

See WAR AND DEFENSE AGENCIES.

Coordinator of Inter-American Affairs

See WAR AND DEFENSE AGENCIES.

Copenhagen

The Danish capital (pop. est. 1940, 700,465) had its greatest shock of modern times on April 9, 1940, when the German army quite unexpectedly occupied the city at 4 A.M. The first two years passed without great difficulties. Neither the German army nor its political representatives interfered with municipal government. In the autumn of 1942, however, the Danish resistance movement began its sabotage operations. It was not long before the population showed its sympathy with the resistance movement openly. Bombardment by British aircraft of the shipyard of Burmeister and Wain in June 1943 helped the population to realize that Danish sabotage was preferable to British bombs. On Aug. 29, 1943, a military state of emergency was declared by the Germans, and the government and rigsdag ceased to function. The local government of the city continued to manage its own affairs after a short occupation by German forces of the town

From that date and onward, events moved quickly. The will to resistance grew. On Sept. 8, 1943, a German soldier was killed in the streets of Copenhagen. The German commander exacted a penalty of Kr.1,000,000 (\$193,080) from the city in punishment. During the following month the city had to pay a further Kr.7,500,000 (\$1,448,100) for German soldiers killed. As these penalties did not have the desired result, the Germans instituted other measures such as clearing murders.

The greatest event in Copenhagen during the occupation was the people's strike. In June 1944 the Germans instituted a curfew in order to prevent saboteurs from working in the hours of darkness. The population retaliated by moving their tables and chairs out on the pavement, where they sat playing cards until the gestapo's cars drove, shooting, through the streets. The gestapo

Montana . . Nevada . . New Mexico Utah . . . Vermont . . Washington .

28

now murdered many Danish patriots, and it needed only this fresh evidence of barbarism to produce a spontaneous civic strike. All work ceased, the shops closed, the trams and trains remained stationary and in a few hours Copenhagen was like a dead city. Helpless in their fury the Germans now stopped all water, gas and electricity. At the same time no one was permitted to leave town and no one to come in. After four days the work was resumed. The Germans had to abolish the cursew and to disperse the hated Schalburg corps. During this people's strike the good work done by the Danish Liberation council was for the first time brought home to the Danes.

On Sept. 19, 1944, the Germans had the whole of the Copenhagen police arrested, and the citizens themselves had to form civic guards. From then on there was no stopping the sabotage. As a countermove the Germans took to blowing up various buildings and pleasure parks such as the Tivoli. The last months after the arrest of the police were the worst experienced. Terror and murder became the order of the day. Every night bombs burst and no one felt secure until May 4, 1945, when the British Broadcasting company informed Danish listeners that the Germans had capitulated and Denmark was again free.

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Copper

World copper output declined by an eighth under the adverse conditions of 1938 and had not yet recovered to the 1937 level of operations when World War II broke out in Europe in Sept. 1939. Under the pressure of war demand, production increased to a peak of 3,090,000 short tons in 1943, or 20% more than the 1937 level and 22% more than the 1939 level.

From this point, supply having caught up with demand, there was some decline in output, with 1944 dropping 7% less than in 1943.

When the war came to an end in Europe early in May 1945, the demand for copper was reduced, and with the Japanese surrender in mid-August it largely disap peared. Although there was a large potential demand for the civilian uses that had been deprived of copper during the war years, it was not possible to maintain output at war levels without war incentives, and in 1945 output declined 15% from 1944, and 22% less than the peak of 1943, bringing it to a point practically on a par with 1939 In view of the large potential civilian demand, industry should have been able to absorb copper at this rate for some time to come, but when the reconversion program was delayed by differences of opinion on procedure, by labour disputes and strikes, by uncertainty as to prices, and other minor factors, the production rate for copper was greatly decreased, and the output for 1946 showed another sharp decline.

In supplying the increased war demand for copper,

the brunt of the load fell on the United States, Chile and Canada. Increases in output by other countries were less than the change in world output. Chile produced 17.7% of the world total in 1937, and 18.1% in 1943, while the United States' share rose from 32.7% to 35.3%. Corresponding percentages for all other important producers were less in 1943 than in 1937; Canada's

percentage increased in

1940, but later declined. United States.-Being at the same time the world's largest producer of copper and the largest producer of munitions, it was only natural that war demand for copper was heavily concentrated in the United States. While the already large domestic output was increased by 30% between 1937 and 1943, as compared with a 20% increase in world output, and an appreciable increase was

Open cut copper mine at Bingham canyon, Utah. The Bingham district ranked first among copper producing districts of the world in 1944 and first in the U.S. during the entire decade 1937—46

Table I.— World Mine Production of Copper						
		(Short ton	s)			
1	937 1938	1939 1940	1941 1942	1943 1944 1945		
Canada	55,995 136,624 55,014 285,625 55,565 387,400 50,791 46,133 39,355 41,612 75,396 280,984 303,893 126,162 41,998 557,763	135,197 164,05 304,051 327,79 373,764 387,91 48,821 41,33 39,150 48,35 236,958 293,77 143,794 173,00 728,320 878,08	7 321,658 301,831 4 512,979 539,094 9 53,590 56,525 3 40,479 38,837 1 255,534 276,089 0 2 176,000	287,595 273,535 238,142 561,383 549,192 518,191 54,756 45,417 67,880 36,715 35,600 31,673 281,009 247,245 215,500		
Total mine 2,57	75,000 2,273,000 84,000 2,245,000	2,415,000 2,640,00	2,860,000 2,970,000			
	Table II.		ndustry in the United States	•		
	937 1938	(Short to	•	1040 1044 1045		
		1939 1940	1941 1942	1943 1944 1945		
Smelter output	41,998 557,763 34,661 562,328 56,814 792,416 22,253 552,574 44,561 239,842 359,800 28,900 267,300 23,200 92,500	1,009,515 1,313,55 704,873 927,23 304,642 386,31 499,700 532,04 286,900 333,89 212,800 198,15	4 966,072 1,087,991 6 1,395,309 1,414,561 9 975,408 1,064,792 7 419,901 349,769 5 726,396 927,755 0 412,699 427,122 6 313,697 500,633	1,092,939 1,003,379 782,726 1,379,263 1,221,187 1,108,599 1,082,079 973,852 775,738 297,184 247,335 332,861 1,086,047 950,942 1,006,516 427,521 456,710 559,815 658,526 494,232 446,701		
Ore and concentrates	79,874 252,164 67,976 69,732 01,069 179,318 7,487 1,801	247,958 338,32 16,264 68,33	7 81,101 70,715 7 305,164 291,185 7 346,994 401,436	6 68,506 65,469 57,490 6 242,999 226,436 262,963 6 402,762 492,395 531,367		
Scrap 35 Exports 35 Stocks, year-end	3,342 1,313 50,167 422,014					
Producers 39 Fabricators Metals Reserve . Withdrawals for use	93,000 414,000 — — —	355,500 334,50 300,543 339,37				
New copper 69	94,906 406,994 27,000 767,000		5 1,641,550 1,678,091 0 2,368,000 2,606,000			
Table III.—Mine Production of Copper in the United States						
	1027	(Short t	•	10 1042 1044 1045		
	1937	1938 1939	1940 1941 194			
Alaska	5,251 10,934 2,232	14,549 128 210,797 262,112 2 806 4,180 14,171 13,215 2,139 2,516 46,743 43,985	12,152 6,748 1, 3,349 3,621 3,	22 27 2 28 28 28 29 29 38 30 3 2 28 7,203 30 38 8,762 12,721 6,473 102 1,028 1,048 1,485 430 2,324 1,688 1,548 679 46,764 42,421 30,401		

171,890

8,998

231.864

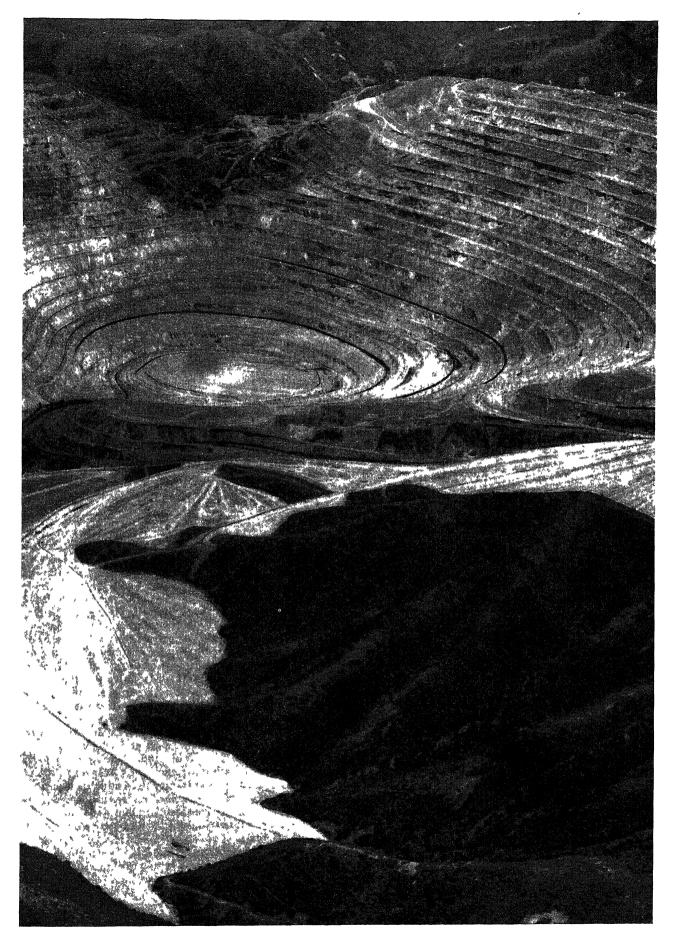
9,612

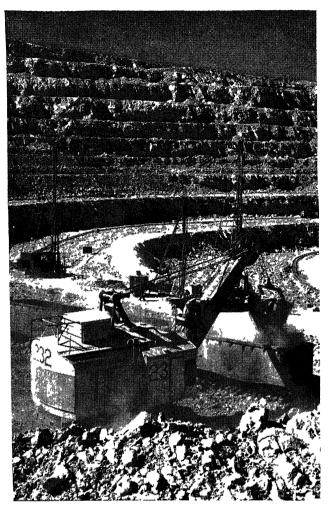
266,838

8,686

8,030

13,659 14,405 14,042 958,149 1,080,061 1,090,818





Removing ore from an open-cut copper mine in Chile

made in secondary recovery, it was only by expanding imports, restricting exports and eliminating nonessential uses that the supply could be made adequate for war demands.

War production strained the producing capacity of the United States almost to the limit, and it would have been impossible to reach the peak of 1,090,818 tons in 1943 without material assistance from the premium price plan, which enabled marginal producers to maintain production. The result of the plan's operations from its beginning in Feb. 1942 to the end of 1945 is outlined in Table IV

Table IV.—Production of Copper under Premium Price Plan (Short tons)

										Ceiling Price	Premium Price	Total
1942										88Ĩ, 7 11	106,383	988,094
1943										841,286	249,532	1,090,818
1944										722,791	246,998	969,789
1945	•	•	٠	٠		٠		•		561,851	212,381	774,232
										3,007,639	815,294	3,822,933

According to these figures, bonus payments to producers whose operating costs were above ceiling price made possible the production of 815,294 tons of copper in these four years, most of which could not have been produced without these payments. In other words, the premium price plan prevented a shrinkage in production that would have cut output during the crucial war years by about one-fifth.

The gradual tapering off of the annual increases in output, with only 10,000 tons increase in 1943, indicated that the U.S. copper mines were approaching their limit

of output, and it is doubtful if another similar addition could have been made in 1944, even if the peak of demand had not been passed. A decline of 11% in U.S. output in 1944 as compared with a drop of only 7% in the world total, and a decrease of 20% in 1945 against a world drop of 15%, were further indications of the overstrained conditions that prevailed.

Mine production declined steadily in 1945, dropping from 70,114 tons in January to 58,174 tons in December. In 1946, this declining rate was aggravated by strikes in the industry, bringing monthly output to a low of 31,962 tons in April, increasing in the succeeding months as the strikes were settled and conditions improved. By October, output had increased to 64,928 tons, and the total for the 10 months was 474,307 tons, indicating a total for the year of little if any more than 600,000 tons.

After the abandonment of price controls in Nov. 1946, the price of copper was increased. The domestic price of 11.775 cents, which had been maintained through much of the war period, was raised to 14.15 cents on June 3. The export price of 11.7 cents had been gradually rising from June and reached 17.43 when the first postcontrol domestic increase was made on Nov. 12, to 17.275 cents. At mid-December, the domestic price was 19.275 cents and export 19.425 cents.

Canada.—Contrary to the experience of most countries, Canada suffered no decline in copper output in 1938 and forged ahead to its peak output of the war, years in 1940, with an increase of 24% more than in 1937. Output decreased steadily in the succeeding years, with 238,142 tons in 1945, down 10% less than the 1937 level. The decline continued into 1946, with 137,816 tons in the first three quarters, 27% less than the same period of 1945. Much of the decline from the 1940 peak could be attributed to shortage of labour, and the end of the war accentuated the drop in 1945, which would have been even more pronounced but for increased exports to the United States. The shortage of supply in the United States led to the importation of 89,965 tons of Canadian copper in 1945, against 61,292 tons in 1944. Another deterrent factor was the fact that close to half of the Canadian output came from nickel mines, with demand for nickel supplementing that for copper.

Chile.—Copper production in Chile increased by 23% between 1937 and 1943, with the bulk of the output going to the United States. After reaching a peak output of 9,561,383 short tons in 1943, declines were relatively small—2% in 1944 and 5% in 1945; reduction in activity became more pronounced in 1946, with the output for the first five months of the year at 137,816 short tons, 17% less than the average rate for 1945.

Mexico and Peru.—Although there were some fluctuations in output in these countries, they were little affected by war conditions. Production increased mildly in Mexico and declined about the same amount in Peru.

Belgian Congo.—After Chile and Canada, the Belgian Congo remained the leading source of U.S. imports. Close to half of the output was sent to the United States. Production was not greatly increased under war demand but was maintained quite consistently. The peak year, 1942, was 11% more than in 1937, and subsequent declines amounted only to 4%.

Northern Rhodesia.—As in Canada, copper production in Northern Rhodesia reached its peak in 1940, with an increase of 7% more than in 1937. Subsequent declines were even more pronounced than in Canada, with that of 1945 down to 27% less than the peak and 22% less than in 1937. Practically all of the Rhodesian copper went to

Great Britain during the war years, but in 1945 about 90,000 tons were diverted to the United States. (See also MINERAL AND METAL PRODUCTION AND PRICES; STRATEGIC (G. A. Ro.)

MINERAL SUPPLIES.)

Copra

See Coconuts.

Copyright

Literary and artistic property is protected in the United States by the Copyright act. This act was designed to cover many different varieties of writings, books, dramas, music, photographs, motion pictures and works of art. It gave the author or copyright proprietor certain exclusive rights (including the performing rights in the case of dramatic and musical works) for a period of 28 years, subject to renewal for a like period. Copyright is secured by publishing the work with the prescribed notice or, in the case of certain classes of works, by depositing a copy with application and fee in the copyright office. The copyright is lost if the work is published without the requisite copyright notice, which for a literary, dramatic, or musical work consists of the word "Copyright," or the abbreviation "Copr.," accompanied by the name of the owner of the copyright and the year of publication. Promptly after publication, two copies of works published in the U.S., or one copy of those published abroad, must be sent to the U.S. copyright office, together with the requisite fee and application.

During the decade 1937-46 the Copyright act was amended in several respects: in 1938, to permit the postmaster general to print and copyright black and white illustrations of U.S. and foreign postage stamps for philatelic purposes; in 1939, to transfer jurisdiction over the registration of prints and labels from the commissioner of patents to the register of copyrights; in 1940, to permit authors to renew the copyright in their contributions to periodicals or other composite works even though not originally copyrighted separately by the author, and to enable the secretary of the treasury and the postmaster general more efficiently and effectively to administer the provisions of the act relating to importation of copies of works; in 1941, to authorize the president to issue proclamations extending the time for foreign authors and publishers to comply with the requirements of U.S. law, because of the disruption and suspension of facilities as the result of World War II. The only such proclamation issued was the one of March 10, 1944, with respect to British nationals, in exchange for a corresponding British order in council in favour of U.S. nationals.

U.S. Court Decisions.-A number of important court decisions arising under the Copyright act were handed down during the decade. Among them was The Washingtonian Publishing Co., Inc. v. Pearson, (1939) 306 U.S. 30, in which the supreme court held that tardiness in the deposit of copies following publication neither destroyed the copyright nor prevented suit for an infringement occurring before their deposit.

Another important case was Fred Fisher Music Co., Inc., v. M. Witmark & Sons, (1943) 318 U.S. 643, in which the supreme court considered the question of the protection given the author by the division of the copyright period into two terms of 28 years each and the provision that copyright for the second term could not be obtained until the last year of the first. The court held that before the time for renewal arrived the author could bind himself by contract to assign his interest in the renewal of the copyright after he secured it.

In Shilkret v. Musicraft Records, Inc., (1943) 131 F. 2d 929, the circuit court of appeals (2d Cir.), overruling the lower court, held that the provision of the Copyright act securing to the copyright proprietor the control of mechanical reproduction of music "published and copyrighted after July 1, 1909," applied equally to copyrighted unpublished musical works, since it was not the purpose of congress to discriminate between published and unpublished music, but merely to confine the right of mechanical reproduction to compositions copyrighted after the effective date of the act. Certiorari was denied by the supreme

In Taylor Instrument Companies v. Fawley-Brost Company (1943), 139 Fed. 98, the circuit court of appeals (7th Cir.) held that recording charts were not copyrightable; that such charts were objects of use and not of explanation or instruction, being essentially mechanical elements of the instruments on which they are used. The supreme court declined to issue a writ of certiorari to review the case. The same ruling was made in the case of Brown Instrument Company v. Warner (1945) 68 United States Patents Quarterly 41, an action brought in the district court, D.C., for a declaratory judgment to compel the register of copyrights to accept and register similar recording charts.

International Copyright.-In the field of international copyright the outstanding event was the conference of delegates from the several republics of North and South America, in Washington in June 1946, at the Pan American union, to draft a convention giving intellectual works uniform protection throughout the hemisphere. The result was a new convention which, if ratified by the several governments, would replace the Buenos Aires Copyright convention of 1910.

Because of World War II, there were no important developments in Europe, except for plans to hold the deferred conference at Brussels to revise the Berne Copyright convention.

U.S. Statistics.—The number of copyright registrations made each year increased approximately 31% during the decade, that is, from 154,424 to 202,144. This great increase was due primarily to a marked growth in the number of musical compositions and periodicals, the two classes of materials which together accounted for more than half the total number of registrations. Musical compositions increased 100% to 63,367, a figure eight times as large as the number of books.

This expansion presumably was an outgrowth of the development of the radio, which greatly increased the profitableness of composing music.

The increase of 27% in the number of periodicals registered each year was apparently due to a growing realization on the part of publishers of the advantages of copyright, for there was no increase during the decade in the number of periodicals published in the U.S. Of the numerically less important classes of materials, prints and pictorial illustrations increased 39%, maps 9%, motion pictures other than photoplays 30% and renewals 45%.

The most important decrease was in the number of registrations of books published in the U.S., which dropped approximately 31%, from 11,244 to 7,679. This represented, of course, a genuine decline in the number of publications and was due to World War II. The number of books printed outside the U.S. in a foreign language and sent to the copyright office for copyright registration was also greatly affected by the war. It dropped from 3,841 in 1937 to 82 in 1944 and then recovered to 3,513 in 1946.

Only a small percentage of the stories and other articles appearing in periodicals were copyrighted separately from the periodicals in which they appeared. The number so copyrighted dropped 27% to 5.504 in the decade. This decline may well have been due to the fact that a larger percentage of the magazines in which these articles appeared were now being copyrighted. (See also Book Publishing Law; Radio.) (S. B. Wr.)

Coral Sea, Battle of

See WORLD WAR II.

Cork

See CHEMISTRY.

Corn (Maize)

The United States corn crop again became a 3,000,000,000 bu. crop during World War II, a record first attained in 1906 and again in 1920. For the five years 1942–46 the average exceeded 3,000,000,000 bu. This was even more remarkable because the acreage was not much above the 1934–43 average, and considerably below that of the record year 1917 during World War I.

The acreage of corn expanded steadily from the American Civil War until 1900 then remained fairly stable until 1909, when it reached 100,000,000 ac. Most crops covered this area until 1931-33, when low prices led farmers to increase acreage of corn, their highest yielding crop. The drought of 1934 and the government's allotment program reduced acreage, which continued to drop to 87,631,000 ac. in 1941, the lowest after 1894. An increase followed, to 97,078,000 ac. in 1944, about the same as had been grown in 1937. While the acreage was not increasing, the new record yields were responsible for the increase in the total crop. Average yields for the U.S. ranged from 20 to 30 bu. until 1934, when the yield dropped to 15.8 bu. per ac. and again in 1936, when it was 16.2 bu. The result was that these two years had the smallest crops in more than 50 years. By 1937, the yield was back to 28.3 bu. per ac. and the crop was above the average of 1935-39. The great increase came in 1941, when the yield increased to 31 bu. per ac. and then by successive steps 35.2 bu. in 1942, 32.1 bu. in 1943, 33.2 bu. in 1944, 33.1 in 1945 and 37.1 in 1946.

Total corn production fluctuated widely with the yields from year to year. The prewar average was about 2,300,-000,000 bu. in 1935-39 which period included the small crop of only 1,505,000,000 bu. in 1936. The second half of the decade, 1942-46, returned three successive crops of more than 3,000,000,000 bu. each, the largest in 1944. This fortunate development, during the period of great war need, was the result of a succession of favourable seasons and outstanding scientific progress in agriculture, such as the introduction of hybrid seed corn. This seed, estimated to have increased yields 20% over the old seed, was used in 58% of the total U.S. acreage planted in 1944, 64% in 1945 and more than 85% in the leading corn belt state, Iowa. Not only was the yield larger, but the crop was more vigorous and rapid-maturing; losses from early frosts were thus reduced. It was estimated that nearly 500,000,-000 bu. of the increased corn crop could be attributed to the use of hybrid seed in 1945. The range of corn yields between states in 1945, a typical year, was from an average of 10 bu. per acre in Florida to 49.5 bu. in Ohio. In the corn belt the five big corn states reported yields per acre as follows in 1945: Indiana, 53 bu.; Ohio, 49.5 bu.; Iowa and Illinois, 46.5 bu. each and Missouri, 27 bu. In 1946 Iowa harvested the record average of 60 bu. per ac. and Illinois 57 bu. The crop was also good along the Atlantic coast, and New Jersey reported an average yield of 45 bu. per ac., Pennsylvania, 44 bu. and Massachusetts and Connecticut each 43 bu. Only occasionally had several years of high yield come together, notably in 1919–23 and for a long period 1937–46. The effects of the increased use of fertilizers were difficult to measure but were estimated to have added one bushel to the yield in 1943.

About 60% of the acreage of corn and 75% of the production continued to be in 11 states: five corn belt, three lake (Michigan, Wisconsin and Minnesota) and South Dakota, Nebraska and Kansas. The shift of corn production to the west was shown by the estimates that the production of the northern plains and the lake states was increasing. Of the individual states, those with the most rapid increase in corn production were Iowa, Minnesota and Nebraska. In Illinois, Indiana, Ohio and Michigan the general trend in acreage was downward with the growth of the soybean acreage.

In 1938 the Agricultural Adjustment administration reduced the acreage of corn by quotas and subsidies in the commercial area which comprised 566 counties in 12 states. A similar program was adopted in 1939. The stocks of corn were so generally used by 1944 that the War Food administration asked for a 100,000,000 acreage, but only 97,579,000 ac. were harvested. The high yield brought the record output.

The small crop of corn in 1936 caused the farm price to reach the high average of \$1.04 per bu., exceeded only in 1916–19 and in 1924. In 1937–39 the price was 51.8 cents to 56.8 cents per bu. Prices then advanced to a top of \$1.12 per bu. in 1943. The average price of corn in the period 1935–39 was 69 cents per bu. at the farm. Loans on stored corn were held at 90% of parity through 1946, and in Jan. 1946 the actual price stood at 96% of parity or \$1.14 per bu. In July corn averaged \$1.96 per bu. at the farm then declined to \$1.22 in December.

Most of the corn crop continued to be fed to livestock on the farms where it was raised. In 1937, only 566,000,000 bu. of the crop of 2,642,900,000 bu. was sold for commercial purposes or to other farmers for feed. These sales rose to more than 760,000,000 bu. in 1944. The stocks of corn owned by the government amounted to 105,000,000 bu. in 1940 and 132,000,000 bu. in 1942, the two years when there was a large reserve. Oct. 1 stocks in terminal markets in the same two years rose to 41,179,000 bu. and 39,137,000 bu. respectively. Farm stocks were only 60,004,000 bu. in 1937 but rose to 553,793,000 bu. in 1939 and then averaged more than 300,000,000 bu. through 1945.

The commercial uses of corn changed somewhat during the decade. The amount of corn made into breakfast foods increased from 6,981,000 bu. in 1937 to 12,000,000 in 1944. Other dry-process uses (meal, hominy and grits) increased from 39,357,000 to 62,000,000 bu. The wet-processes (starch, syrup and sugar) increased most of all, from a utilization of 71,647,000 bu. in 1937 to 125,000,000 bu. in 1944. Alcohol and distilled spirits increased consumption from 18,376,000 bu. to 38,000,000 bu. In 1945 the big demand for corn for feed and food led the government to restrict the use of corn for alcohol making.

U.S. foreign trade in corn was not important before the drought period of 1934. Exports had reached a total of 200,000,000 bu. once in 1897. In 1921 the top was 167,800,000 bu., followed by a decline to a few million bushels each year until 1934. As a result of the drought, corn imports which had averaged less than 1,000,000 bu., rose to

			millions		isi			
	1937	1939	1941	1942	1943	1944	1945	1946*
U.S. Total	2.642.9	2,580.9	2.675.7	3.131.5	3.034.3	3.203.3	3 018 0	3 287 0
lowa	498.6	490.6	462.5	574.0	605.4	579.4	476.4	661.6
Illinois	444.9	401.3	409.2	416.9	419.2	407.2	378.0	514.3
Nebraska	82.9	78.4	157.6	242.7	329.8	329.8	241.8	231.3
Minnesota	172.4	201.6	194.0	207.1	215.4	253.3	216.2	239.8
Indiana	213.8	204.9	177.0	216.7	210.4	176.2	231.2	231.4
	163.2	169.5	160.9	185.7	174.0		175.1	
	117.7					142.9		178.4
	42.2	126.2	113.2	146.8	139.8	162.5	104.5	171.9
	42.2	47.3	48.6	101.6	79.7	140.2	110.4	120.3
Wisconsin	76.3	86.6	88.8	103.5	108.9	116.5	107.1	111.9
Kentucky	68.9	64.2	73.0	82.2	75.3	67.0	69.7	81.9
Tennessee	66.5	56.6	69.6	75.9	65.9	59.9	<i>57.</i> 3	65.6
Michigan	55.6	59.8	48.7	69. 7	52.9	<i>57.7</i>	61.9	50.5
Kansas	29.4	38.5	57.2	90.0	84.3	114.7	68.5	63.2
Texas	75.8	75.7	73.8	78.5	88.4	69.6	54.4	55.0
Pennsylvania .	59.6	54.0	53.2	54.5	49.1	53.5	59.4	59.3
North Carolina	45.3	52.0	52.6	47.0	51.0	51.0	55.1	58.9
Alabama	48.6	31.7	51.2	43.9	48.5	48.1	48.0	42.0
Georgia	48.3	39.9	42.0	39.1	45.2	40.8	48.3	44.1
Mississippi	46.8	37.4	51.2	49.1	43.5	42.2	48.5	36.4
Arkansas	43.0	34.4	40.8	37.1	25.2	32.3	28.6	30.9
	37.3	36.4	32.9	35.5	33.2	34.2	39-2	
Virginia North Dakota .	18.0	18.2	25.6	28.4			25.7	36.3
New York	23.8				25.3	36.2		25.5
		24.1	27.0	27.6	22.7	25.6	21.6	26.6
Oklahoma	29.6	26.4	31.2	35.6	23.3	32.9	22.6	25.8
South Carolina	24.1	24.8	22.3	21.3	25.4	24.1	24.1	27.4
Maryland	36.0	16.8	15.7	16.3	11.8	17.1	17.0	17.3
Louisiana	25.9	23.0	22.2	24.4	22.3	18.8	20.9	15.0
Colorado	8 <i>.7</i>	7.0	15.0	18.2	15.0	16.6	16.8	14.3
West Virginia .	13.2	13.1	12.3	13 <i>.</i> 7	14.0	10.4	11.2	10.2
New Jersey	8.0	6.7	7.5	8.3	6.0	6.7	8.3	8.5
Florida	7.3	5.9	6.8	7.4	8.1	7.1	7.7	6.9
Delaware	4.1	3.8	3.9	4.0	3.2	3.6	4.2	4.5
Montana	1.3	2.1	3.5	3.8	3.2	1.5	2.2	2.5
Vermont	2.6	2.6	2.6	2.8	2.4	2.5	2.3	2.3
California	2.5	2.3	2.6	2.5	2.5	2.2	1.9	2.1
Connecticut	1.9	1.9	1.9	2.0	1.9	2.0	2.1	2.2
	1.7				1.7	1.7	1.6	
Massachusetts .		1.6	1.6	2.8				1.6
Idaho	1.9	1.8	2.4	2.4	1.6	1.5	1.2	1.0
Oregon	2.3	2.0	2.0	1.7	1.8	1.4	1.1	1.1
New Mexico	2.7	2.4	3.3	3.7	2.9	3.5	2.1	2.2
Washington .	1.2	1.1	1.4	1.3	1.4	1.1	1.0	.8
*Preliminary e	estimate.							

36,955,000 bu. in 1934; 21,096,000 bu. in 1935 and to 103,670,000 bu. in 1936. A good crop in 1937 checked imports and in 1937 exports rose to 139,893,000 bu.—a total approaching the record. The surplus of exports continued to 1946.

World corn production ranged from about 4,000,000,000,5,000,000,000 bu. during the 20 years before 1937. By this date the crop had grown to 4,980,000,000 bu. and in 1940 was estimated at 5,054,000,000 bu. Of this total, more than half was produced in the western hemisphere. Supplementing the U.S., Argentina had an average crop of about 350,000,000 bu. up to World War II and Brazil around 230,000,000 bu. In Europe the corn belts are in the lower Danube valley, the Po valley in Italy and in some parts of the U.S.S.R.

The Danube crop averaged about 500,000,000 bu. before the war, Italy about 130,000,000 and the U.S.S.R. 150,000,000 bu. About 75,000,000 bu. per year were raised in South Africa. The crops declined as the war reached the Balkans and Italy. Droughts in 1945 reduced the crop in Argentina and in Italy. In Argentina, corn was so low in price that it was used for fuel during the shipping shortage.

The drought forced South Africa to import corn. The United Kingdom grows no corn (maize) but calls wheat "corn." (See also Agricultural Research Administration; Chemurgy; Vegetables.)

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Corn Borer

See ENTOMOLOGY.

Cornhusking

Regarded as one of sportdom's most interesting and best attended events, the U.S. national cornhusking championship was a wartime casualty. The tournament was canceled in 1942 "to save rubber for war use" and was not held during the rest of World War II. Nor was it revived

in 1946.

Farmers claimed the mechanical picker, making hand picking a lost art, was responsible for the failure to revive the championship along with other sports in 1946.

After reaching its peak attendance of 150,000 at Newark, O., in 1936, the annual cornhusking championship continued to draw crowds in the six figures until it was abandoned in 1942.

Floyd Wise of Prairie Center, Ill., won the 18th annual championship in 1941 at Tonica, Ill., and continued as duration champion.

The world's record of 46.71 bu. of corn husked in 80 minutes was held by Irvin Bauman of Illinois, made in the 1940 tournament. The next best mark was 45.37 bu., established by Wise in 1941.

Bauman husked approximately 4,000 ears in setting his world's record.

Champions after 1936 were: Ray Hanson of Minnesota, 1937; Ted Balko of Minnesota, 1938; Lawrence Pitzer of Indiana, 1939; Irvin Bauman of Illinois, 1940, and Floyd Wise of Illinois, 1941.

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Corporation Income Tax

See TAXATION.

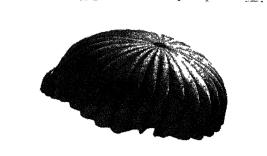
Corregidor

When, on Dec. 13, 1941, Japanese troops invaded the Philippines, landing on northern and southern Luzon, an attempt was made to hold them in these regions, but the Filipino army troops were unable to stem the tide of invasion which consisted of several times their own number of better trained, better organized and better equipped troops.

The commander in chief of the U.S. army forces in the far east, General Douglas MacArthur, therefore decided to withdraw his troops to the Bataan peninsula, where a defensive position could be taken up to protect the island fortress of Corregidor, and the three other fortified islands, at the mouth of Manila bay, from assault by land-based troops moving from the Bataan peninsula. Corregidor is the principal island of the four, all of which had been fortified shortly after the turn of the 20th century to prevent hostile ships from entering Manila bay. The other three islands, from south to north, are Carabao (Fort Frank), El Fraille (Fort Dunn), and Caballo (Fort Hughes). The fortifications on Corregidor Island were known as Fort Mills. Corregidor Island lies athwart the entrance to Manila bay from the west and at the nearest point is 3,500 yd. from the southern tip of Bataan, and about 17,000 yd. from the southern shores of Manila bay. It had long been recognized that if an enemy should gain possession of southern Bataan, his heavy artillery fire could dominate Corregidor and the other fortified islands.

The majority of the armament on these islands was initially emplaced to fire to seaward or to the west. Only a few of the heavy artillery pieces had all-around fire which could be brought to bear upon the Bataan peninsula or upon the south shores of Manila bay in Cavite province.

Having withdrawn his troops to the Bataan peninsula, General MacArthur ordered a stubborn defense of that area. This was carried out against greatly superior forces until April 9, 1942, when, overcome by starvation, sickness and troops superior in equipment, training and experience, the Filipino and U.S. troops on the Bataan peninsula were





Paratroopers, supported by ground forces, landing on Corregidor in the combined assault launched on Feb. 16, 1945. Their target was the "Rock," gateway to Manila harbour, which the Allies planned to reopen for U.S. shipping

forced to capitulate. This completely isolated Corregidor and the other fortified islands. The Japanese then moved a great quantity of heavy artillery to the southern shores of Bataan and began a consistent shelling of Corregidor accompanied by heavy aerial bombardment. In spite of this terrible pounding, the defenders of Corregidor held on manfully for 27 long days and nights. Casualties in personnel were heavy, and practically all the heavy armament was destroyed by artillery fire or air raids. The Japanese had excellent observation from balloons and from Marivales mountain and could readily spot the batteries which fired toward Bataan. One by one they were destroyed.

On the night of May 5, at 10:15 P.M., the Japanese assaulted from boats which they had assembled on the southern and western shores of Bataan. There was insufficient armament left upon Corregidor to repel this assault. and the landing was successful. Fighting continued throughout the night, in some places hand to hand, and the next morning until noon. At this time, Lt. Gen. Jonathan M. Wainwright, who had succeeded General Douglas MacArthur as commander in chief of the U.S. forces in the Philippines, decided that further resistance was hopeless and could only end in the complete slaughter of his troops. He therefore asked for a meeting with the Japanese commander in chief in the Philippines and at about 6:00 р.м., at Cabcaben, Bataan, tendered the surrender of the U.S. army forces in the Philippines, to Lt. Gen. Masaharu Homma.

Less than three years later (Feb. 1945) Corregidor was recaptured by a U.S. combined assault. (J. M. W.)

Corundum

See ABRASIVES.

Corvedale, Viscount

See BALDWIN OF BEWDLEY.

Cosmetics

See SOAP, PERFUMERY AND COSMETICS.

Cosmic Rays

See Physics.

Costa Rica

A Central American republic, bounded by Nicaragua on the N.W., the Atlantic ocean on the N.E., Panama on the S.E. and the Pacific ocean on the S.W. Area, 23,000 sq.mi.; pop. (1944 official est.), 725,149. According to the director-general of the Costa Rican statistical office, a more accurate figure would be 835,000. Earlier pop. ests. were 1940, 656,129; 1941, 668,060; 1942, 687,354; 1943, 706,596. Density for the entire country, by the 1943 estimate, was 36.73. The bulk of the population was located in the small central plateau (meseta central), where the principal cities and towns are situated. The overwhelming majority of the highland population is of Spanish descent, principally Galician and Andalusian. The racial distribution indicates 80% white, 14% mestizo, 4% Negro and 2% Indian. The 22,000 Negroes inhabit the Atlantic coast, centring on Puerto Limón. The capital and principal city is San José (pop. est. 1944, 77,182); other cities (with 1944 pop. ests.): Heredia, 10,578; Alajuela, 10,170; Limón, 10,033; Cartago, 12,933; Puntarenas, 8,547.

Presidents during the decade 1937-46 were: León Cortés Castro, 1936-May 10, 1940; Rafael Angel Calderón Guardia, May 10, 1940-May 8, 1944; Teodoro Picado Michalski, after May 8, 1944.

Toward Improved Economy.—Pres. Cortés made serious efforts in 1937 to put Costa Rica on a more solid economic basis by means of a debt adjustment with foreign bondholders, stimulation of the coffee industry and a reciprocal trade agreement with the United States. The important trade agreement with the United States, effective Aug. 2, 1937, contained many technical provisions designed to stimulate mutual trade; the United States pledged to continue the duty-free admission of Costa Rican coffee, bananas, cacao and other products, and Costa Rica agreed to reduce tariffs on lard, certain meats, fruits and other products imported from the United States. Commercial treaties were negotiated in 1938 with Czechoslovakia and Yugoslavia. The congress in March 1939 levied a 100% duty on goods from countries whose sales to Costa Rica exceeded their purchases by 50% or more. Japan was the chief nation affected.

Proposals made in the U.S. congress early in 1939 that Cocos Island, an uninhabited Costa Rican possession lying 300 mi. off the Pacific coast, should be leased or purchased as a part of Panama canal defenses attracted much attention in Costa Rica; the government in September sent a military detachment to occupy the island to prevent its use by belligerents during World War II, which had just broken out. Costa Rica participated in the first foreign ministers' conference representing the American republics, held at Panamá city in Sept.—Oct. 1939. It vigorously protested soviet aggression against Finland late in the year. Nicaraguan efforts in October to negotiate a treaty with Costa Rica for the canalization of the San Juan river, forming a part of their mutual boundary, proved unsuccessful.

The quadrennial presidential election, held Feb. 11, 1940, resulted in placing in office Dr. Calderón Guardia, who was inaugurated May 10. During his administration

Costa Rica continued to maintain very cordial relations with the United States and to co-operate closely with hemisphere defense measures. Strong public demonstrations in June against Italian entry into World War II indicated general popular support of the government's policies. Costa Rica was also an active participant in the second foreign ministers' conference, held at Habana, Cuba, in July 1940.

The country was hard hit economically by European war conditions, especially through loss of European markets for its coffee, but continued banana development in the Parrita-Quepos region, involving an annual influx of more than \$3,000,000 in new capital, helped to modify the economic crisis. It was said that the new plantations were the most scientifically prepared of any in the world. The precarious state of the coffee industry, Costa Rica's chief economic reliance, was somewhat improved by the Inter-American Coffee Quota agreement of Nov. 28, 1940, aimed at the orderly marketing of coffee and the adjusting of supply to demand. The agreement allotted Costa Rica a basic quota of 200,000 bags of 60 kg. each for export annually to the United States, although the subsequent annual adjustment of quotas permitted a greater export figure; the 1936 export had totalled only 104,036 bags. Costa Rica in Oct. 1940 created a coffee quota committee to estimate annual domestic requirements, establish minimum prices for exports and assign quotas among domestic exporters.

Strongly Pro-Ally.—Costa Rican public opinion throughout 1941 was strongly Pan American and antiaxis, in keeping with the country's democratic tradition. The government in January banned the dissemination of totalitarian propaganda through the mails and deported two Germans in May on charges of proaxis activities. These and other antiaxis measures, including seizure of axis ships in Costa Rican ports in May, led to a German demand in August for withdrawal of Costa Rican consuls from German-dominated areas. When Japan attacked Pearl Harbor in Dec. 1941, Costa Rica's declaration of

Costa Rica, the first nation to declare war on Japan after the Japanese attack on Pearl Harbor in 1941, followed this act with the seizure of Japanese fishermen and cotton planters, shown below in a prison at San José war against Japan on Dec. 8 preceded that of even the United States by a few hours; war was declared on Germany and Italy on Dec. 11. Defense measures involved close co-operation with the United States. Costa Rica obtained a U.S. credit of \$500,000 in June for purchase of war materials, and 2 months later an agreement authorized the sending of a U.S. military mission. The Export-Import bank granted a \$4,600,000 loan in 1941 to advance the work begun on the Costa Rican portion of the Inter-American highway and to stabilize Costa Rican currency. The government reached an agreement with Panamá delimiting the common boundary and thus ending a long-standing controversy between the two republics; some opposition to the settlement persisted in Costa Rica.

On Jan. 30, 1942, the government approved the joint declaration of the United Nations and in May it severed diplomatic relations with Rumania and Hungary. The sinking of a vessel within the harbour of Puerto Limón by a submarine, presumably German, resulted in antiaxis riots and the arrest of several suspects. The national emergency resulted in a suspension of constitutional guarantees on March 5, for a 60-day period; the state of siege was further extended in June. The government early in the year created a national civilian defense board to concern itself with problems of defense preparations. An office of price investigation and control was established March 27 to deal with prices and the supply of commodities. Under the direction of this agency the reexport of manufactured articles was prohibited; it also took over the regulation of the price and production of such items as drugs, livestock, metals, oils and fats, corn, beans and rice. Fear of misuse of U.S. currency by axis agents resulted in the prohibition of both import and export of such currency, and the national bank of Costa Rica took over supervision of all foreign exchange Government agencies and the fruit companies backed efforts to increase production of abacá and rubber, both to encourage production of strategic materials and to substitute for the 30% loss in revenue caused by reduction of banana exports.

An especially significant development of 1943 was an



		938		1940	1'	945
ltem	Value (000's omitted)	Amount or Number	Value (000's omitted)	Amount or	Value (000's omitted)	Amount or Number
Exchange rate United States		1 Costa Rican colón = 17.7 cents		1 Costa Rican colón = 17.7 cents		1 Costa Rican colón = 17.7 cents
Great Britain	\$6,670 (£1,364)	27.44 colones $=£1$	\$5,458 (£1,425) \$5,556 (£1,451)			
Transportation	\$5,374 (£1,099) \$25,696 (£5,256)	413 mi.	\$23,623 (£6,168			
Railroads		183 "		4,048*		
Telegraph lines		2,928 mi. 20,000 (no date given)		22,000*		
Minerals Gold		17,994 oz. 335 tons 5,225 "				
Crops Coffee	·	22,315 tons† 12,070 " † 8,457 " † 7,771 " †				
Rice	\$10,146 (£2,075) \$4,938 (£1,010) \$2,807 (£574) \$831 (£170)				\$11,612 (£2,881) \$7,489 (£1,858) \$2,233 (£554) \$261 (£65)	98,724 tons 24,077 " 61,966 " 1,440 "
Imports—total	\$12,621 (£2,582) \$1,273 (£260) \$784 (£160) \$614 (£126)	1,000 tons 44,000 " 8,000 "			\$26,949 (£6,687) \$107 (£27) \$1,033 (£256) \$80 (£20)	230,542 tons 271 " 51,310 " 1,073 "
Defense Standing army personnel	\$463 (£95)	339	•••	324 947		
Education Primary schools		606‡ 54,750‡		761* 73,217* 49*		831 § 95,642 §
Enrolment		•••		7,251 * 1 * 820 *		5,020§ 1 1,174
*1941. †1939. ‡1937. §1946.						**

agreement in March by which the United States was given a lease on 10,000 ac. of land for growing cinchona for production of quinine. A formal agreement was arranged late in the year for U.S. purchase of all suitable balsa wood that Costa Rica could produce. Serious advances in prices early in the year resulted in a drastic decree designed to curb profiteering; penalties for profittaking of more than 20% ranged up to 6 months in prison. Shortages of many items continued but conditions improved in the latter half of the year, and by September price levels had dropped slightly. Both Mexico and the United States raised the rank of their diplomatic representatives from minister to ambassador.

Certain constitutional guarantees remained suspended. A new labour code introduced in April 1943 was opposed by conservatives but was passed by the congress in November and added to the constitution as a series of amendments. Much interest developed in 1943 over political alignments made in prospect of the presidential election scheduled for Feb. 1944. The leading candidates were former Pres. León Cortés Castro and Teodoro Picado, president of the congress. Picado had the support of the National Republican (administration) party and was also backed by the Vanguardia Popular, the renamed Communist party. Electoral reforms were proposed in the spring but were objected to on the ground that one candidate would be favoured by them; the proposed laws were withdrawn in June. In the same month the Communist party was disbanded, in line with the ostensible dissolution of the third international, and in its place was organized the Vanguardia Popular with, however, the same leadership, membership and ideology. Soon afterward Archbishop Víctor Sanabria, head of the Catholic hierarchy, announced that Catholic workers could hold membership in the Vanguardia, though not in fascist or nazi organizations.

Construction of international highways through Costa Rica proceeded rapidly. The Inter-American highway, from the U.S. border to the Canal Zone, had been under construction for some years, but in 1942 the U.S. war department concluded that as a military emergency a road should be hastened to completion, partially following new routes. Costa Rica was more vitally affected by such a plan than any other Central American country since more of the uncompleted route was in Costa Rica than in any other of the republics. Work was suspended in Sept. 1943 after the military situation and the submarine threat eased. In hearings held before a U.S. senate subcommittee in Los Angeles, Calif., in Sept. 1946 it was brought out that the route being constructed under auspices of the Public Roads administration had undergone one detour in Costa Rica in order to bring it past a ranch owned by the Costa Rican president. It was also charged that political pressure caused an "access road" to a cinchona plantation to be constructed in Costa Rica at a cost of \$340,000 and that the international highway had to cut across a mountain in that country because it otherwise might have competed with a government-owned railway.

Conditions in Costa Rica in 1944 were more disturbed than for a long time previously, partly because of the general wave of unrest and revolutions that swept through Central America during the year. The elections on Feb. 13, 1944, were designed to choose a new president and half of the members of the congress. By the beginning of 1944 it was obvious that a rumoured "deal," by which Calderón Guardia would bring about the election of Cortés as his successor with Picado being placated by being allowed to designate certain cabinet members, was unfounded. It was widely charged during the campaign that Cortés had the support of nazi sympathizers in return for his own friendliness for that group. A Mexican journalist was quoted as saying that profascist groups were

planning an armed uprising. Vicente Lombardo Toledano, Mexican labour leader, charged on Feb. 1 that shipments of arms and munitions were being clandestinely introduced into Costa Rica in preparation for a revolution. Lt. Gen. George H. Brett, commander of the Caribbean defense forces, denied that U.S. units were participating in a reported naval patrol to prevent such arms smuggling. A gun battle on Feb. 7 at San José was said to have resulted in the death of 1 person and injury of 42. Other disorders took place, especially in the capital, and the situation continued tense until the election.

As was anticipated, Picado was declared the winner, the final count being reported as 78,341 for Picado to 42,646 for Cortés Castro; 14 supporters of Picado and 9 of Cortés were elected to the congress. The opposition made many charges of pressure and intimidation by the government in favour of Picado. Three days after the election Pres. Calderón Guardia released all those who had been imprisoned for "political agitation" during the campaign. (R. H. FN.)

The Picado Administration.—When Teodoro Picado Michalski assumed office on May 8, 1944, he made the following declaration of foreign policy before the congress:

Let us take this opportunity to reiterate our faith in the victory of the democracies; and pay homage again to their leaders as well as their armies, and in general, their people, who suffer unheard of privations and make untold sacrifices so that a regime of barbarity and oppression does not enthrone itself in the world.

The government adhered to its principle of consulting the other American countries in the matter of the recognition of governments which had risen by force; this was in agreement with the recommendations of the Emergency Committee for Political Defense of the Hemisphere as set up in Montevideo, Uruguay. The same procedure was followed with regard to the recognition of the Italian government headed by Ivanoe Bonomi.

Of special importance to Costa Rica was the end of the demarcation of its borders with Panamá on Sept. 18, 1944, based on the treaty of May 1, 1941; the government of Chile had acted as mediator. Costa Rica re-entered the International Labour organization and was represented at the Montreal conference in 1944.

The resolutions of the Conference of Chapultepec (Mexico) on the problems of war and peace, held in Feb. 1945, were accepted in accordance with constitutional practice. Julio Acosta, a former president of Costa Rica, and other distinguished delegates took part in this conference, as well as in the consequent assembly of the United Nations at San Francisco.

Costa Rica subscribed to the International Monetary fund and the Bank for Reconstruction and Development created in 1944 and was represented at the United Nations conference in London.

In agreement with a resolution adopted at the Conference of the Ministers and Directors of Education of the American Republics in Panamá in 1943 the government signed a convention with the Inter-American Educational Foundation, Inc., to create a better understanding between Costa Rica and the United States through an exchange of educative ideas and methods.

The administration of Pres. Picado, a former minister of public education, paid special attention to problems of education. Legislation was improved in this respect-teachers' salaries were increased, rural schools were encouraged, state and private secondary schools adopted better curricula, an institute was founded in the province of Guanacaste, the National Institute of Physical Geog-

raphy was reorganized on a firmer basis, the system of scholarships was greatly increased and the work of cultural missions in rural schools was organized.

All possible attention was paid to public health. In this task the Co-operative Inter-American Public Health service of the United States provided valuable assistance.

The government likewise occupied itself with the planning of agricultural production so that the economic life of the country would no longer depend exclusively on certain products, and an equilibrium in production could be obtained. A reform of customs regulations was adopted; a close survey was made of the activities of the Costa Rican Commission on Inter-American Development, the Coffee Control institute and the Cane and Beet Sugar commission.

A notable characteristic of Picado's administration was its attempt to consolidate democratic institutions, guarantee republican life and fully respect civil liberties. In his desire to perfect the system of popular vote the president entrusted members of the supreme court of justice with the formulation of an advanced plan in this respect; and an electoral code was issued later on to guarantee freedom of expression. A constitutional reform was also adopted to fix the basis of civil service in Costa Rica.

(T. P. MI.)

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Cost of Living

See Business Review; Prices.

Cotton

Both the production and consumption of cotton were at a record level in 1937. The world's crop was estimated at 98,625,000 bales after a steady increase from about 20,000,000 bales in 1923. The increase was principally in the United States, China, U.S.S.R., Egypt and Brazil. The world's crop dropped off after 1937 to an average of about 27,000,000 bales in 1938-44 and 24,500,000 bales in 1945. After 1940, estimates were without data from China and the U.S.S.R. and could be higher. Consumption was running below the declining production. During World War II, the high level of consumption in the U.S. about offset the smaller consumption in other countries. World consumption was estimated at 31,000,000 bales in 1937 and 24,000,000 bales in 1945. Countries devastated by World War II had reduced mill consumption and lacked exchange to buy raw cotton or fuel for the mills. Stocks were increasing abroad wherever shipping was available, although world stocks of all kinds were estimated to be lower in 1946 than a year earlier. Mill consumption as a whole was estimated to be 4,000,000 to 5,000,000 bales below the prewar average. The U.S. arrangement whereby payment for raw cotton was accepted in the form of finished goods helped meet the shortage of exchange in some countries.

The production of the world's cotton crop was changed by the wartime need for more food as well as by the reduction of cotton manufacture, particularly in Europe. In 1937 production was as follows: U.S. about 19,000,000 bales; India 4,700,000 bales; China 3,500,000 bales; U.S.S.R. 3,700,000 bales; Egypt 2,200,000 bales; Brazil 2,000,000 bales; and Peru, Mexico, Argentina, Uganda and the Sudan each less than 375,000 bales. By 1944, out of a total

world crop about 12,000,000 bales smaller, the reported production of the principal countries was: U.S. 12,200,000 bales; India 2,955,000 bales; China and U.S.S.R. unreported; Egypt 960,000 bales; Brazil 1,400,000 bales; and the other countries a smaller total. The only increases in the decade were in Mexico and Argentina. The world cotton trade as a whole was estimated to be about 5,000,000 bales less in the 1945-46 season than in the prewar period 1935-39. The British announced early in 1946 that the Liverpool Cotton exchange would remain closed as it had been during World War II, and that all imports would continue to be handled by the government. The Indian Central Cotton committee recommended that acreage be held at the reduced level of about 60% of the prewar acreage in order to foster food production. This action would return a crop of about 2,800,000 bales, compared with more than 4,000,000 bales produced in the period 1935-39.

The International Cotton Advisory committee met in Washington, D.C., in May 1946, with 27 cotton-producing and -consuming countries represented. While an international cotton agreement was not made, the resolutions recommended that an executive committee establish central offices to keep the world cotton situation under continuous review by collection of statistics and reports, exchange of information, co-operation with the United Nations Food and Agriculture organization, and by calling meetings of the advisory committee whenever necessary. The F.A.O. set up a fibre unit to begin the study of methods of improving the efficiency of production and distribution of cotton in all of the United Nations. While the F.A.O. was concerned first with food production, its charter covered all of agriculture and the importance of cotton brought it first attention.

United States.—The U.S. cotton crop underwent several remarkable developments during the decade 1937-46. A constantly shrinking acreage was accompanied by almost steady increases in yields which maintained total production at a fairly stable level followed by a decline almost to the lowest level of 50 years. A comparatively low price for a large crop in 1937 was followed by price increases to

Mechanical cotton picker, designed to do the work of 50 to 80 labourers, being demonstrated in southern U.S. during 1945

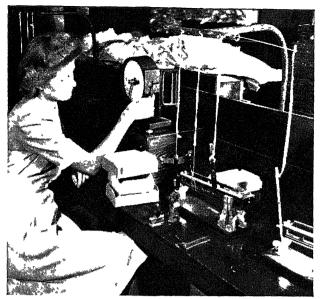


a high level during World War II which resulted in a total value to producers more than double that at the beginning of the decade. These unusual changes were the result of favourable weather for production together with the influence of government actions and the stimulus of war demand.

An all-time high record production was harvested in 1937 when the crop was estimated at 18,946,000 bales of 500 lb. gross weight. Previous to that year total production had reached 17,000,000 bales only in 1926 and 1931. The highest production in the period of World War I was 16,112,000 bales in 1914, followed by crops averaging about 11,400,000 bales. After 1937, production declined to an average of 11,700,000 bales in 1941–43, and to the very small crop of 9,015,000 bales in 1945, the smallest after 1921. Except for the year 1921, when boll-weevil damage brought the crop down to 7,945,000 bales, the 1945 crop was the smallest after 1896.

The acreage planted to cotton in the U.S. increased steadily for a long time to about 36,000,000 ac. in 1918. A decline in 1921 was due to heavy damage by boll weevils which reduced these crops more than 20% from a full yield. Additional cotton areas in the western part of the cotton belt brought a total increase in acreage during the period 1921–26. After 1926 there was a gradual decline in acreage to the low point of 17,688,000 ac. in 1945, and 18,179,000 ac. in 1946. The acreage in 1945 was the smallest harvested after 1884; the largest acreage, nearly 46,000,000, had been planted in 1925. The cotton belt farmers shifted much of their area to food and feed crops, oil seeds and truck.

The trend of yields of cotton per acre remained at about the same level from 1900 to 1914, at around 180 lb. per acre. Then followed a decline from 1914 to 1923 caused by boll-weevil damage and the shifting of cotton-growing to lower yielding areas. A low point was reached in 1921, when the average yield was only 132.5 lb. per acre. Beginning in 1937, new high record yields were harvested, as follows: 1937, 269.9 lb. per ac.; 1942, 272.4 lb.; 1944, 293.3 lb.; 1945, 253.6 lb.; 1946, 230.7 lb. It is noteworthy that these yields, averaging 231 lb. in 1934-43, were almost 100 lb. per ac. above the low output of 1921. The increases were due to the fact that more of the crop was grown on higher-yielding soils; as acreage was reduced the poorer lands were abandoned first. Weather and boll-weevil damage were about the same after 1938 as in the previous decade. Losses from these causes were notably small in 1937. Another factor was fertilizer, which was used on about 37% of the area planted in pre-World War II years, while in 1941-43, 45% of the crop was fertilized. The rate of application also increased from 273 lb. in 1935-39 to 297 lb. in 1941-43. It was estimated that a ton of fertilizer increased cotton production 1.7 bales. Better yields also were secured from improved seed, and the increased use of legumes as green manure. A summary of the factors causing better yields attributed the gain of 40 lb. per acre to: fertilizers 15 lb.; use of better land 9 lb.; favourable weather 3 lb.; less disease damage 1 lb.; better seeds and general culture 12 lb. The amount of commercial fertilizer used per acre increased from 280 lb. in 1937 to about 325 lb. in 1946. The percentage of the crop fertilized also increased from 36.7% in 1937 to 47.9% in 1946. The total tonnage of fertilizer used was about 1,500,000 during the decade-below the 2,200,000 tons used in 1928-29, when the total acreage of cotton was twice as large. Greater boll-weevil damage in 1941-43 reduced yields about 12 lb., leaving a net gain of 28 lb. per ac. Improved soil conservation practices introduced



Breaking strength of cotton fibres being tested at a U.S. department of agriculture laboratory, Stoneville, Miss., in 1943

after 1936 also contributed to the better cotton crops.

The shift in cotton production to the western part of the cotton belt began about 1915. In the eastern coastal plains the growing of more peanuts, vegetables and feed crops decreased cotton acreage. During the decade 1937-46 the proportion of the production in the delta region increased most rapidly. The coastal plain share declined more than any other region, the Piedmont only slightly. In the west the Texas blacklands produced less, as did the Ozark hills and Oklahoma prairies. In the irrigated areas the acreage of cotton increased until 1937 to about 1,125,-000 ac., then declined to about 750,000 in 1941-43, because of the growing demand for vegetables and alfalfa. The acreage of American-Egyptian cotton was encouraged by the government in 1942, and about 165,000 ac. was planted. But when it became apparent that this cotton was not so urgently needed in 1944, the acreage was reduced to about 14,000 ac. and in 1946 to only 2,700 ac.

The development of new machines for cotton culture and harvesting proceeded slowly during the decade 1937–46. The tractor was introduced for plowing and cultivation, but the general-purpose cotton picker remained in the testing stage and did not come into widespread use. A new type of flame thrower to destroy weeds was tested. The agricultural experiment stations and farm implement manufacturers continued tests during World War II, and many new machines were promised for postwar manufacture. These experiments indicated that machines could

U.S. Cotton Production by Leading States, 1937–46 (In thousands of bales)

		1937	1939	1941	1942	1943	1944	1945	1946*
U. S. Total		18,946	11,817	10,744	12,817	11,427		9,015	8,482
Texas		5,154	2,846	3,766	3,038		2,646	1,794	1,650
Arkansas		1,904	1,413	1,281	1,485	1,122	1,394	1,042	1,240
Mississippi		2.692	1,582	1,585	1,968	1,841	1,937	1,560	1,040
Alabama		1,631	785	1,145	925	959	1,006	931	800
South Carolina .		1.023	871	406	699	696	864	664	695
Georgia		1,500	915	624	855	847	810	669	555
Tennessee	:	661	449	598	925	491	562	466	510
North Carolina .	•	780	457	552	727	596	710	428	420
California		738	443	404	402	341	327	353	435
Oklahoma		773	526	718	708	384	634	285	260
Missouri		404	437	476	417	295	411	180	305
	-	1,104	745	313	593	739	620	387	250
		313	202	181	193	131	136	117	143
		163	102	106	111	108	116	106	145
New Mexico		43	13	28	34	24	29	16	16
Virginia	•			17	16	16	13	8	15
Florida	•	40	11			14	15	ş	13
All others	•	23	20	25	21	14	13	7	13

*December estimate.

reduce the man labour to less than one-fifth the amount required by the one-row mule plow and hand picking. The introduction of machinery proceeded much more rapidly in the level delta areas than in the hill country and was expected to increase the advantages of cotton culture in these areas. The use of the aeroplane for dusting cotton for boll-weevil control continued to improve in the level areas. The estimated reduction from a full yield by boll-weevil damage ranged from 5.3% in 1937 to a high of 15.4% in 1941; it then declined to 3.9% in 1944, and rose again to 6.5% in 1946. Losses from plant diseases and insects other than boll-weevil accounted for losses of from 3% to 5% during the decade.

The record of cotton prices to producers during the decade was one of steady rise after 1937, when the average was estimated by the U.S. department of agriculture at 8.41 cents per lb., to 37.69 cents in Oct. 1946. This price exceeded the previous record in 1919, when the average to producers for the year was 35.3 cents per lb.

The government resumed making loans in 1937. In March 1938 the Agricultural Adjustment administration held a referendum of growers, who voted 92.1% in favour of restricting acreage for benefit payments and loans. This was repeated in 1939, when 85% of the growers favoured the plan. By the end of 1938, the government held a loan stock of 10,400,000 bales from the crops of 1934-37 and 1938. The crop was restricted through 1940 and 1941. In 1942 and 1943 the government urged the planting of peanuts, soybeans and feed crops in place of cotton and less short-staple cotton. The U.S. had on hand almost a twoyear's supply of short-staple cotton in 1942-43. By 1945 the government was suggesting only 20,000,000 ac. for 1946 with loans at 921/2% of parity on upland cotton as of Aug. 1946. Stocks had been reduced to the smallest since 1937.

The carry-over stock of cotton as of Aug. 1 began to be large in 1938. Up to 1937 these stocks had declined in amount each year, from 9,678,000 bales in 1932 to 4,499,000 bales in 1937. In 1938 the carry-over was 11,533,000 bales; in 1939, 13,033,000 bales and from 1940 to 1946, an average of about 11,000,000 bales. These stocks were about equal to the annual crops and larger than total consumption of U.S. cotton in both domestic and foreign mills. Domestic consumption in 1937 was 5,616,000 bales, increasing to 10,973,000 bales in 1941, the peak of cotton manufacture, followed by a decline to 9,456,000 bales in 1944. Without government price supports, the large stocks would have greatly depressed prices.

The total consumption of cotton was estimated to be 2,855,000,000 lb. in 1937, 5,492,000,000 lb. in 1942, the highest quantity of any year in the decade, and 4,749,000,000 lb. in 1944. On a per capita basis the consumption was: 21.9 lb. in 1937; 40.2 lb. in 1942 and 34 lb. in 1944.

In 1939 about 16.4% of the carry-over consisted of low quality short-staple cotton amounting to 2,100,000 bales. By the end of 1944, about 21.5% consisted of this short-staple cotton because of the end of German and Japanese demand for this low-quality stock. Prices advanced for the long cotton compared with the short-staple and price differentials widened.

Exports of cotton were 5,595,000 bales in 1937 and declined to 1,112,000 bales in 1940 but increased to 2,006,000 bales in 1944 and to 3,250,000 bales in 1945. France became the largest buyer. The first postwar shipments to Japan began in March 1946, under U.S. supervision to sell the textiles provided in payment for the raw cotton. The

destination of shipments and amounts exported in 1945 was as follows: France 347,569 bales; Canada 125,162 bales; United Kingdom 121,671 bales; Spain 73,883 bales; Poland 63,903 bales; Yugoslavia 47,541 bales; Czechoslovakia 37,248 bales; Switzerland 14,347 bales; and all other countries 92,000 bales.

Cottonseed production varied with the size of the cotton crop, but its price and value were affected by the strong demand for vegetable oils. The average price of cottonseed rose from \$19.50 per ton in 1937 to \$52.70 in 1944 and then declined slightly in 1945-46. The output of oil held fairly constant after 1937 at around 1,300,000,000 lb., and the price more than doubled, from 6.6 cents per lb. in 1937 to 13.7 cents per lb. in 1946. The demand for the meal for feed caused its price to more than double during the decade. The amount of the cottonseed left on farms declined as the price advanced, and less seed was exchanged for meal by the farmers. The U.S., once an exporter of cottonseed oil, shipped little or none during the war years. The principal exporters were Brazil, Egypt and British-controlled areas in East Africa. (See also CHEM-(J. C. Ms.)

Manufacture.—The decade 1937–46 arrested certain deflationary trends in the economy of cotton manufacture in the world and the U.S., but produced other circumstances to aggravate and accelerate those trends, when competitive factors once again had rein. World War II placed cotton manufacture in a sort of vacuum, just as it did to so many branches of industry.

The most important influences tending toward liquidation of segments of the cotton-manufacturing industry in the first part of the decade were: (1) competition from synthetics and other materials; (2) technological progress on several fronts; and (3) geographical dislocation of the industry both within a country and in the world as a whole.

Wartime research produced results which, while improving cotton's performance, gave a long-term net advantage to synthetics, both in the versatility of the fibres themselves and in the technique of processing them. In addition, nonindustrial nations out of the war zone entered cotton manufacture or improved their position in that field.

The problem facing the industry at the end of the decade could be summarized as follows: cotton manufacturers in general had to decide whether they could adjust themselves to the broader role of textile manufacturers without primary emphasis on the type of fibre processed, or face the possibility of eventual liquidation. Cotton manufacturers in a country like the U.S., with high wage levels and standards of living, had to decide whether they could yield their place in production of cheap staple goods to newly industrialized countries and develop instead the specialized and styled types of products with wider profit margins. If they could not make these adjustments, they might follow the down-hill road taken by silk manufacturers after World War I.

A clear picture of the deflationary trends which were at work in the industry prior to World War II may be secured by a comparison of the decade 1937-46 with the preceding decade. The excellent statistics maintained by the Association of Cotton Textile Merchants of New York made possible such a case study for the U.S.

At the start of the first of the two decades—that is, in the beginning of the year 1927—spindles in place totalled 37.364.730, or nearly the peak for the country. Each year

during the ensuing decade this total declined, until at the beginning of 1937 it was 27,573,770, a drop of about 10,000,000 spindles. The first years of the next decade, 1937–46, continued the peak rate of decline, but this was arrested in 1940 as the result of the defense program; and in the last war year, 1945, there was an actual increase of 700,450 spindles in place, the first increase in 20 years. At the start of 1946, the total was 23,806,392 spindles.

These figures on equipment in place contrasted with those on production of cotton goods. In 1927, the output in the U.S. was 7,936,942,000 sq.yd.; in 1937, it was 9,445,-914,000 sq.yd.; and in 1945, production totalled 9,779,238,-000 sq.yd. In other words, despite a decline of 10,000,000 spindles (or about 25%) in the first of the two decades, output of goods increased about 15%; while in the next decade, a decline of about \$600,000 spindles was again accompanied by an increase in production.

In fact, in the peak year 1942, production of cotton goods was 12,204,611,000 sq.yd., an increase of nearly 50% over 1927, while equipment in place in 1942 was one-third less than in 1927.

The reasons for this paradox were, primarily, technological improvement and increase in hours run per spindle in place. On the latter point, it is revealing to note that in 1937, hours run per spindle in place were 3,962, going up to a war peak of 5,793 in 1942. This fact must be emphasized: World War I changed a large part of the industry from a one-shift to a two-shift basis, while World War II introduced a third shift. If the latter was to become a part of the industry's routine, potential over-production would again be a threat.

The supply of synthetic fibres was controllable by man whereas cotton was still subject to the whims of nature. Similarly, the characteristics of synthetic fibres, and therefore their performance, were limited in versatility only by the limitations of man's ingenuity, and the latter had certainly not stopped working.

However, cotton manufacturers did not accept the implications of this advance in synthetics, and of the competition from paper and other products, complacently. Important research and promotion activities resulted in new cotton products, new finishes and new methods of merchandising. But it must be re-emphasized that the long-term odds were against those manufacturers who tied their future exclusively to cotton as a raw material. Cotton has a certain structural rigidity which limits the changes man can make in it.

The new and completely synthetic fibres, on the other hand, started with no such handicap.

Cotton would continue to supply the bulk of the world's textile needs for some time to come. That much was certain. However, it was equally certain that it had no assured monopoly on that position. Its priority, which was reinforced by wartime shortages during the "ten eventful years," would be challenged again in the decade ahead. (See also Linen and Flax; Rayon and Other Synthetic Fibres; Textile Industry; Wool.)

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(D. G. Wo.)

Cottonseed Oil

See VEGETABLE OILS AND ANIMAL FATS.

Counterfeiting

See SECRET SERVICE, U.S.

Countries of the World, Areas and Populations of the

See Areas and Populations.

Court of Justice, International

See International Court of Justice.

Courts, Civil and Military

See Law.

Coventry

City, county and parliamentary borough of Warwickshire, England, Coventry is 94 mi. northwest of London. Pop. (estimated) (1939) 225,000; (1946) 235,000.

Much happened in Coventry between the years 1937–46. During World War II, its factories were busy turning out products for all the three services and, according to Winston Churchill, more equipment was being produced per yard of space in Coventry than in any other industrial place in the country. In addition to the existing factories, which in peacetime manufactured motor cars, engineering products and electrical equipment, and sent them to all parts of the world as well as providing for the home market, the government erected six shadow factories for the manufacture of aero-engines.

This resulted in a large influx of workers from all parts of the country and created heavy billeting problems, until the government sponsored the erection of hostels, some of which were later converted into workers' dwellings, lodgings for married couples and training places for future teachers.

None will forget the terrible German air attacks on the city on Nov. 14-15, 1940, and April 8-10, 1941, when several hundred people were killed and many thousands injured. There was much destruction and damage of property, including the complete destruction of the great Coventry and Warwickshire hospital and partial destruction of the cathedral.

In all raids on Coventry, the total number of persons killed was 1,236.

Coventry was one of the first "blitzed" cities to plan its future. By the new plan it was intended that there should be higher buildings and more open spaces. The object was to avoid congestion on both streets and pavements. The scheme was for "neighbourhood units" grouping together similar activities. Historic buildings which had not been completely destroyed, such as the cathedral and St. Mary's hall, would be preserved and worked into the plan.

From the cathedral across the old Broadgate there would be a vista westward to the new shopping centre, markets and offices; to the south and east of the cathedral there would be civic buildings, such as police and law courts, town hall, library and museum and institute for adult education. The existing council house would remain.

(J. C. L. G.)

CPA (Civilian Production Administration)

See WAR AND DEFENSE AGENCIES.

Craigavon, James Craig, 1st Viscount

Viscount Craigavon (1871-1940), Irish statesman, was born in Craigavon, County Down, Ireland, Jan. 8, 1871. After service in the Boer War, 1899-1902, he was elected to parliament in 1906. In 1919 he became parliamentary secretary to the ministry of pensions, and the following year financial secretary to the admiralty. He became first prime minister of Northern Ireland in 1920, when the

new Government of Ireland act went into effect. Created viscount in 1927, he continued as prime minister until his death, at Glencraig near Belfast, on Nov. 24, 1940.

Cranberries

See FRUIT.

Credit

See Banking; Business Review; Consumer Credit.

Crerar, Henry Duncan Graham

Crerar (1888—), Canadian army officer, was born April 28, 1888, in Hamilton, Ont. He was educated at Upper Canada college at Toronto and the Royal Military college, Kingston. Commissioned a lieutenant (1910), he served in France during World War I, attaining the rank of lieutenant colonel. He was a general staff officer attached to the British war office, 1925, later becoming director of military operations and intelligence in Canada's department of national defense.

Promoted to brigadier general and sent overseas at the outbreak of World War II, he was subsequently named a lieutenant general but voluntarily stepped down to major general in order to take command of a Canadian division in Britain. Gen. Crerar, who became a corps commander on April 6, 1942, led the 1st Canadian army corps fighting with the British 8th army in Italy and on March 21, 1944, he was made commander of the 1st Canadian army in England. Several Dutch and Polish units as well as two Scottish divisions were incorporated in Crerar's army command.

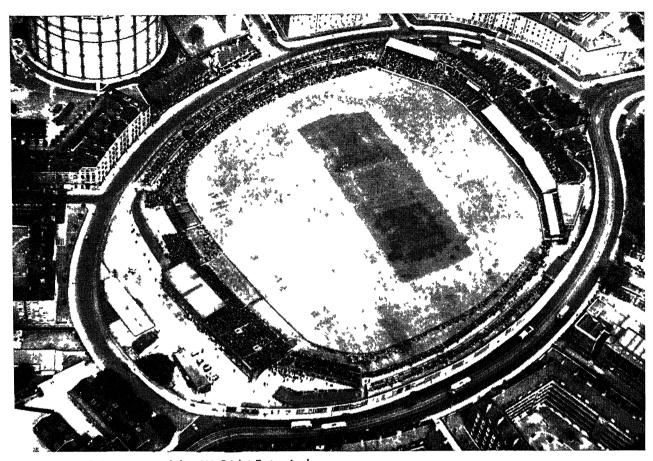
The Canadian 1st participated in the invasion of western Europe in the summer of 1944 and fought alongside the British 2nd army in the Falaise-Argentan sector. After Patton's break-through at St. Lo, Crerar's troops pierced the German right flank and crossed the Seine, retaking several coastal ports in northern France.

On Nov. 20, 1944, it was announced that Crerar had been raised to the rank of a full general. On March 22, 1945, his forces in conjunction with the British 2nd opened a drive between Arnhem and Duesseldorf. They marched northward into the Netherlands and Germany. Crerar's 1st then cut off German escape routes in the Netherlands. As the war ended Canadian and British forces had swept northward to Bremen and Hamburg.

Cricket

Despite the banking clouds of political anxiety in Europe, the sun shone steadily on cricket in the years immediately preceding the outbreak of World War II. The English team which, under G. O. Allen's captaincy, visited Australia in the winter of 1936-37, though it lost the rubber after winning the first two tests, completely restored the happy atmosphere of the game which had been jeopardized by the "body-line" controversy of the previous tour. Unlucky in illness and injury and somewhat unreliable in batting, though W. R. Hammond and M. Leyland did well, they could not in the long run hold out against the dominance of D. G. Bradman's batting and the persistence of W. J. O'Reilly and L. Fleetwood-Smith with the ball.

The season of 1937 was marked by the 150th anniversary of the foundation of the Marylebone Cricket club, which was celebrated in London by a memorable week's cricket at Lord's and a dinner presided over by the duke of Gloucester. Other highlights of the summer were pro-



Kennington Oval, Surrey, scene of the 1938 Cricket Test series between England and Australia, Aug. 20–24. England won the last match by the most decisive margin since the first international series in 1876

vided by a visit of a New Zealand team which played England to a draw in two out of the three test matches, and by the first women's matches between England and Australia in which the mother country was successful and the standard of technique impressive, with Miss M. Maclagan altogether outstanding as an all-round player.

The Australian team that visited England in 1938 retained the "Ashes," but they owed far too much to two men, Bradman and O'Reilly, to be ranked with some of the great combinations of the past. Despite the burden of captaincy which he sustained admirably, Bradman had a marvellous season, scoring 13 hundreds, one of them the decisive factor in his side's victory in the hard fought and low scoring game at Lord's. O'Reilly toiled with superb accuracy and courage, but the support he received was thin. In the drawn games at Nottingham and Lord's, in their victory at the Oval (Manchester was washed out), the English side proved itself possibly as strong in batting as any in history: E. Paynter's 216 in the first was countered by an innings of 232 of astonishing brilliance by S. J. Mc-Cabe, as was Hammond's 240 at Lord's by W. A. Brown's 206 not out (he had then defied England's bowling in two consecutive tests for 12 hours and had been out only once): some fast bowling by E. L. McCormick got England into trouble for a time from which D. Compton, who had made a century in his first test innings at Nottingham, retrieved them with a masterly 76 not out. The Oval match was at once a portent and a tragedy: England's total of 902 for 7 wickets, L. Hutton's 364 in 131/2 hours of faultless batting, his second wicket stand of 382 with Leyland (187) and sixth wicket stand of 215 with J. Hardstaff (169 not out),

were all records, but from the moment when Bradman twisted his ankle and was carried off the field the match was dead, and except for Brown, who batted right through their first innings, the Australian batsmen showed little stomach for an inevitably lost fight.

In the winter of 1938, England under Hammond's captaincy visited South Africa. For the first time in that country all the tests were played on turf wickets, and these proved so favourable to run-getting that only one of the five matches was finished, when England won the third at Durban by an innings. With South Africa still able to draw the rubber, the fifth match was to be played to a finish, but produced such an orgy of runs and at so slow a pace that it had in the end to be abandoned if the English team were to catch their boat home. Scoring 530 in their first innings, South Africa ultimately set England 696 to win, and when time foreclosed the Marathon with players and spectators alike almost too tired to think, England had reached 654 for five wickets, and it was to be hoped the last nail had been driven into the coffin of timeless cricket. Throughout the tour the English batting was powerful. Hammond averaged 87, Paynter made three centuries in the tests with 243 in the third as a record for the series, W. J. Edrich redeemed a lean run by 219 in the final innings and Hutton was consistency itself. For South Africa their captain, A. Melville, and P. G. van der Byl did well; but the bowlers on both sides had a hard task, even Hedley Verity's 19 wickets costing him 29 each. Financially the tour was a great help to South African cricket.

In the summer of 1939, a West Indian team visited England. Though they lost the only one of the three test matches brought to a conclusion when England beat them at Lord's, they played excellent cricket. In G. Headley they had a great batsman who, with 106 and 107, made

history by being the first man to make two centuries in a test match at Lord's. Leary N. Constantine and C. B. Clarke did well in attack and the former, perhaps the greatest entertainer that the game had known, hit so devastatingly for 79 in the Oval test as to reduce the English bowlers to utter impotency. R. S. Grant proved a popular and excellent captain; Hutton scored 196 in the Lord's game and 165 not out at the Oval.

The county championship in England during the years 1937-39 was dominated by Yorkshire with a well balanced and highly disciplined side under an astute and determined captain in A. B. Sellers; its bowling, with Verity and W. E. Bowes the protagonists, was much the strongest in the country, and it was always supported by an aggressive and well-placed field. Middlesex in each year was runnerup, and Gloucestershire in 1939 enjoyed a triumph in twice beating the champions and finishing third in the table. G. W. Goddard was perhaps the best bowler in England in the latter half of the season. In the representative matches at Lord's, the Gentlemen enjoyed a triumph in 1938 when they beat the Players for only the second time after 1914, but in the two other years they were outclassed. Oxford had a strong side in 1937 and won the university match easily, but Cambridge came near to upsetting all form next year when only rain robbed them of victory, and in 1939 they fought a most gallant rear guard action to get to within 45 of the 430 runs set them in the last innings. In this year too Harrow gained their first victory over Eton after 1908.

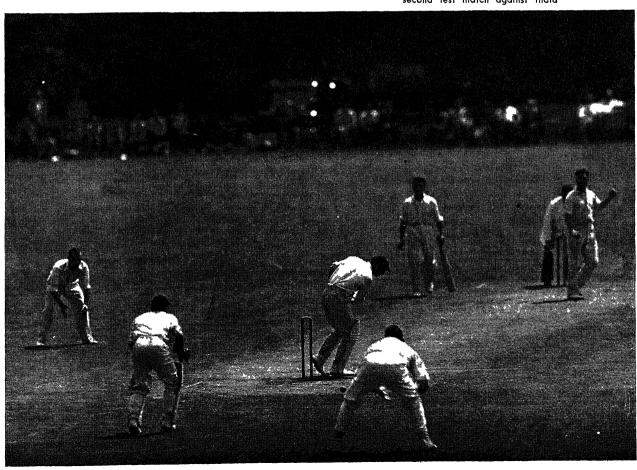
Other features falling within the years 1937-40 were tours of English teams in India, Canada and Argentina, a new record by Bradman who in the winter of 1939-40 made 1,062 in Sheffield shield matches with an average of

132, and an adjustment of the leg-before-wicket law in favour of the bowler (1937).

The onset of war put a summary end to first-class cricket in England, but the game survived vigorously in the schools, in the leagues and in the activities of the British empire and London counties' elevens, the former very amateur, the latter largely professional; their matches raised large sums for war charities. Air raids did heavy damage to the Oval, Old Trafford and Sheffield grounds, but the M.C.C. and county clubs continued to enjoy the loyal financial support of their members. In 1941, thanks largely to the energy and optimism of Sir Pelham Warner, who was acting as secretary at Lord's, there were four oneday matches between the army and royal air force at Lord's, and this policy was steadily developed. In 1943, huge crowds saw England beat the dominions by eight runs, while in that year and in 1944 the enthusiasm and skill of the royal Australian air force side further whetted the public appetite.

In 1945 the M.C.C. and the service authorities organized five "victory tests" between England and Australia (not to be included in the regular series), which evoked cricket of high class and tremendous public interest; each side won two games, while the third, which broke all attendance records at Lord's, was drawn. Features of the cricket were the fast bowling and the splendid driving of the Australian, K. R. Miller, the all-round play of D. R. Christofani and the fine batting of Hammond and Hutton. The

Final test trial at Canterbury, on July 12, 1946. Twelve men from among those playing were chosen to represent England in the second test match against India



season ended with a game between England and the dominions in which the latter won by 45 runs, and Hammond and Miller gave an unforgettable exhibition of hitting. A representative committee appointed by the M.C.C. during the war to consider the future of cricket pronounced against any alteration in the laws of the game in favour of three-day matches and above all urged enterprise and energy in its control by the captains.

In 1946, the game was resumed on prewar lines with great enthusiasm. In spite of wretched weather, attendances and membership were encouraging, and there was much cricket played. An eleven from India, under the Nawab of Pataudi, did well, considering the adverse weather, to play England to a draw in two out of the three tests, though they lost the Lord's game easily enough. In V. M. Merchant they had a great batsman, in L. Amarnath, and V. Mankad a pair of bowlers better than any that England could produce, and their fielding was excellent. The Lord's game was dominated by an innings of 205 not out by J. Hardstaff, and Alec V. Bedser of Surrey took 11 wickets in each of the first 2 tests. Merchant's 128 was the feature of the rain-ruined Oval match. Once again Yorkshire and Middlesex won first and second place in the championship; each side owed much to the leadership and cricket of their captains, Sellers and R. W. V. Robins. Hammond, Hutton, C. Washbrook and D. Compton were the great batsmen of the year, but the bowling was not up to prewar standards. At the end of the season an M.C.C. team under Hammond left to try to recover the "Ashes" from Australia. At the close of 1946, Australia had won the first two test matches, the first at Brisbane on Nov. 29-Dec. 4 by an innings and 332 runs, and the second at Sydney on Dec. 13-19 by an innings and 33 runs.

	Leading Englis	sh Battıng Av	erages 193	7-39, 194	6	
Year	Batsman	Number of innings	Total runs		Times not	A
		_			out	Average
1937	Hammond	55	3,252	21 <i>7</i>	5	65.04
	Hardstaff	46	2,540	266	2 7	<i>57.</i> 72
	Hutton	48	2,883	271*	7	56.62
1938	Hammond	42	3,011	271	2	75.27
	Hardstaff	37	1,827	169*	2 7	60.90
	Hutton	37	1,874	364	6	60.45
1939	Hammond	46	2,479	302	Ž	63.56
	Hutton	52	2,883	280*	6	62.67
	Compton (D.)	50	2,468	214*	6	56:09
1946	Hammond	26	1,783	214	5	84.90
	Washbrook	43	2,400	182	8	68.57
	Compton (D.)	45	2,403	235	ŏ	67.61
*Not out			-,		-	00.
1401 001				9		
1401 001	Leading Englis	sh Bowling A	verages 19	37–39, 19.	46	
Year	Leading Englis Bowler	sh Bowling A Overs	verages 19. Maidens	37-39, 19- Runs	46 Wickets	Average
		_	-		Wickets	-
Year	Bowler	Overs 253.3	Maidens	Runs 680	Wickets 47	14.46
Year	Bowler Matthews Verity	Overs 253.3 1,386.2	Maidens 59 487	Runs 680 3,168	Wickets	14.46 15.68
Year	Bowler Matthews Verity	Overs 253.3	Maidens 59 487 359	Runs 680 3,168 4,158	Wickets 47 202 248	14.46 15.68 16.76
Year 1937	Bowler Matthews Verity Goddard	Overs 253.3 1,386.2 4 1,478.1 932.3	Maidens 59 487 359 294	Runs 680 3,168 4,158 1,844	Wickets 47 202 248 121	14.46 15.68 16.76 15.23
Year 1937	Bowler Matthews Verity Goddard Bowes	Overs 253.3 1,386.2 ±1,478.1	Maidens 59 487 359 294 424	Runs 680 3,168 4,158 1,844 2,476	Wickets 47 202 248 121 158	14.46 15.68 16.76 15.23 15.67
Year 1937	Bowler Matthews Verity Goddard Bowes Verity Clay	Overs 253.3 1,386.2 41,478.1 932.3 1,191.4 648	Maidens 59 487 359 294 424 150	Runs 680 3,168 4,158 1,844 2,476 1,639	Wickets 47 202 248 121 158 94	14.46 15.68 16.76 15.23 15.67 17.43
Year 1937	Bowler Matthews Verity Goddard Bowes Verity	Overs 253.3 1,386.2 41,478.1 932.3 1,191.4 648 936.3	Maidens 59 487 359 294 424 150 270	Runs 680 3,168 4,158 1,844 2,476 1,639 2,509	Wickets 47 202 248 121 158 94 191	14.46 15.68 16.76 15.23 15.67 17.43 13.13
Year 1937	Bowler Matthews Verity Goddard Bowes Verity Clay Verity	Overs 253.3 1,386.2 41,478.1 932.3 1,191.4 648 936.3 712.3	Maidens 59 487 359 294 424 150 270 151	Runs 680 3,168 4,158 1,844 2,476 1,639 2,509 1,767	Wickets 47 202 248 121 158 94 191 122	14.46 15.68 16.76 15.23 15.67 17.43 13.13
Year 1937	Bowler Matthews Verity Goddard Bowes Verity Clay Verity Bowes	Overs 253.3 1,386.2 41,478.1 932.3 1,191.4 648 936.3 712.3 819	Maidens 59 487 359 294 424 150 270 151 139	Runs 680 3,168 4,158 1,844 2,476 1,639 2,509 1,767 2,973	Wickets 47 202 248 121 158 94 191 122 200	14.46 15.68 16.76 15.23 15.67 17.43 13.13 14.48
Year 1937	Bowler Matthews Verity Goddard Bowes Verity Clay Verity Bowes Goddard Booth	Overs 253.3 1,386.2 41,478.1 932.3 1,191.4 648 936.3 712.3 819 916.2	Maidens 59 487 359 294 424 150 270 151 139 451	Runs 680 3,168 4,158 1,844 2,476 1,639 2,509 1,767 2,973 1,289	Wickets 47 202 248 121 158 94 191 122 200 111	14.46 15.68 16.76 15.23 15.67 17.43 13.13 14.48 14.86 11.61
Year 1937	Bowler Matthews Verity Goddard Bowes Verity Clay Verity Bowes Goddard	Overs 253.3 1,386.2 41,478.1 932.3 1,191.4 648 936.3 712.3 819	Maidens 59 487 359 294 424 150 270 151 139	Runs 680 3,168 4,158 1,844 2,476 1,639 2,509 1,767 2,973	Wickets 47 202 248 121 158 94 191 122 200	14.46 15.68 16.76 15.23 15.67 17.43 13.13 14.48

Test matches: England v. Australia English tour in Australia, 1936-37

First.-Brisbane, Dec. 4-9, 1936. England, 358 and 256; Aus-

tralia, 234 and 58.

Second.—Sydney, Dec. 18-23, 1936. England won by an innings and 22 runs. England, 426 for 6 wickets declared; Australia,

Third.—Melbourne, Jan. 1-6, 1937. Australia won by 365 runs. Australia, 200 for 9 wickets declared and 564; England, 76 for 9 declared and 323.

Fourth.-Adelaide, Jan. 29-Feb. 3, 1937. Australia won by 148

runs. Australia, 288 and 433; England, 330 and 243.
Fifth.—Melbourne, Feb. 26-March 3, 1937. Australia won by an innings and 200 runs. Australia, 604; England, 239 and 165.

First.-Trent Budge, June 9-14. Drawn. England 658 for 8 wickets declared, and did not bat; Australia, 411 and 427 for 6 wickets declared.

Second.—Lord's, June 24-28. Drawn. England, 494 and 242 for 8 wickets declared; Australia, 422 and 204 for 6 wickets. Third.-Old Trafford, July 8-12. No play, rain.

Fourth.—Leeds, July 22-25. Australia won by 5 wickets. England, 223 and 123; Australia, 242 and 107 for 5 wickets. Fifth.—Oval, Aug. 20-24. England won by innings and 579 runs. England, 903 for 7 wickets declared; Australia, 201 and 123 (2 absent hurt each innings).

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(H. S. A.)

Crime

Crime in the United States showed several major changes in the decade 1937-46, and while postwar influences were fulfilling all forecasts as to their probable effect upon crime frequency, there was nothing to indicate that the country as a whole was headed for much higher levels of criminality. Absence of the problems incident to national prohibition, such as featured the previous postwar crime increase in the 1920s, contributed much towards a moderation of the crime frequency changes following World War II. There was, however, the usual rediscovery of juvenile delinquency as a great national problem, even though the means for determining the actual frequency of such crimes still were not available.

The best index of the number and type of criminal acts committed in the United States continued to be provided by the Uniform Crime Reports, collected and published by the Federal Bureau of Investigation in co-operation with the International Association of Chiefs of Police and more than 5,000 state and local police forces.

Among the 412 cities with more than 25,000 population, all but 2 were submitting regular returns by 1946 of "offenses known to the police," compiled by police agencies according to uniform rules and crime classifications. In 1937 there were 19 cities in this population bracket that did not participate. About 95% of the 666 cities and towns from 10,000 to 25,000 population also were filing such reports, as compared with 91% in 1937. The 1,533 smaller places reporting in 1937 increased to more than 2,000 in 1946.

Total population included in the crime reporting area was 73,000,000, as compared with 66,000,000 in 1937. Rural districts were still far less completely represented than urban areas. Nevertheless, the samples for rural areas were sufficiently numerous and representative to permit general measurements of trends in rural crime, while the reporting area for urban places was so nearly complete that only the abiding defects of all social statistics served to qualify the meaning of the crime reports received from them.

But however substantial the bases for recording the number of crimes committed, the means still were not at hand for computing or even roughly estimating the amount of juvenile crime and delinquency. Reasons for this condition arose from the fact that only detected crimes could be identified as of juvenile origin. Reports on the extent of delinquency therefore rested entirely upon the number of cases in which juveniles were prosecuted; and this of course varied with law enforcement and other policies, sometimes without regard for the actual amount of juvenile participation in crime occurrences.

Hence in appraising the crime developments of the decade it is of primary importance to distinguish between the data derived from reports of "offenses known to the police," and those stemming from the number of persons arrested, charged or fingerprinted.

Changes in Crime and Criminality, 1937–46.—The 1937–46 decade was marked by some highly varied shifts in the amount of certain crimes in urban areas. In general the trend from 1936 through 1944 was downward. This was especially pronounced in robbery and auto theft, with negligent manslaughter (chiefly in the operation of motor vehicles) and murders also showing some decline. But burglaries and larcenies edged up slightly, aggravated assaults (i.e., with a deadly instrument) were almost one-third higher and rape showed an increase of 75%.

The end of World War II brought an immediate change in the crime situation, with all categories of reportable offenses showing more or less marked increases during 1945 and 1946. Some of the largest increases occurred with respect to types of crimes that had been most sharply declining during the major part of the decade. Thus robbery and auto theft, which had led all the rest in the retreat from higher levels from 1937 to 1944, now showed the highest percentage of increase. In 1945 alone, the upturn for robbery was 23.6%, and for auto theft 18.7%. But burglaries, which had changed direction easily during the fore part of the decade, with a very slight upward tendency, now rose by 17% in a single year. Negligent manslaughters were not far behind (16.2%) and were followed by murders (10.1%), aggravated assaults (8.7%) and larcenies (8.6%). Rape, which had shown the largest and most consistent increase from 1937 to 1944, now significantly had the smallest gain-only 5.7%.

Thus the general effect during the immediate postwar period was one of return to earlier crime levels and earlier crime trends. In reviewing such criminal data one cannot avoid the conclusion that during the war years and war's aftermath crime frequency was largely controlled by the presence or absence of those age groups tending to commit a disproportionate share of criminal acts, and which also were inducted into the military service in the largest numbers. As these youthful components of the general population were moved out of the United States and into the theatres of war, most categories of crimes tended to decline. When redeployment changed the direction of such shifts, the crime index rose with amazing fidelity.

Rural increases in crimes generally were accomplished at a slower rate than in the cities, although the relatively infrequent crimes of murder, rape, aggravated assault and robbery actually rose more rapidly in rural areas than in urban.

Shifts in the rates for rural crimes are summarized in Table I. The total population of the reporting areas therein represented varies with each year between 30,000.000 and 35,000,000 inhabitants.

Table 1.—Rural Crimes: Rates per 100,000 Inhabitants, 1943-45 Inclusive

	1943	1944	1945
Murder and non-negligent manslaughter	4.11	3.96	4.49
Manslaughter by negligence	2.99	3.01	3.46
Rape	8.82	8.69	9.73
Robbery	11.50	11.60	14.80
Aggravated assault	22.80	22.70	26.40
Burglary	91.40	94.80	107.60
Larceny	151.50	155.40	156.30
Auto theft	44.10	52.50	59.50

As in the case of the cities, these figures show mixed relationships for the years 1943-44, but with the close of the war in 1945 the upswing of reported crimes in rural areas was too positive to be missed.

The net effect of these various shifts was that the general crime level in 1945, for urban and rural areas combined, was only about 12% higher than in 1937. While there was some evidence of a further upward tendency in prospect before the full effects of postwar factors were registered, there was nothing to indicate that the nation was

confronted with a new criminal era of unexplained ferocity.

Stated in raw figures, the estimated grand total of all reportable offenses included in the nation-wide crime reporting system was 1,565,541 in 1945, or an average of 1 such offense in each 20 seconds. Included in this total, however, were many crimes of slight magnitude, and others which had been thwarted in their commission and therefore constituted attempts at crime, rather than completed offenses. That every 61/2 minutes someone was raped, or assaulted with a deadly instrument or slain was a more challenging and a more startling description of conditions. On the other hand, the estimated daily toll of 662 stolen cars was slight indeed when compared with the tens of millions of such vehicles left unattended day and night on city streets and rural highways. In fact, national levels for auto thefts were only six or seven times greater than the number of such crimes in Chicago alone in the early 1930s. Hence if some ground had been lost by crime control at the war's end, the line had not given way everywhere by any means, and there were some points at which substantial gains were discernible.

The mixed character of crime trends during the 1937-45 period is shown in simplified form in Table II, wherein

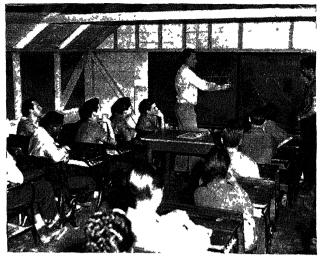
Table II.—Estimated Total Number of Reportable Offenses in the United States: 1937, 1941, 1945

	1 <i>937</i>	1941	1945
Murder and non-negligent manslaughter	7,859	7,562	6,847
Manslaughter by negligence	5,705	4,582	4,387
Rape	8,518	9,257	11,537
Robbery	59,786	49,832	54,279
Aggravated assault	45,478	48,385	59,807
Burglary	292,870	302,475	321,672
Larceny	780,031	919,120	865,521
Auto theft	215,569	190,059	241,491
Totals	1.415.816	1.531.272	1,565,541

it will be noted that while most of the offenses had reached fairly high levels in the 1945 upsurge, the murder and manslaughter curves were still tending definitely downward, while the total of robberies, which rose sharply in 1945, still did not reach, or even closely approach, the 1937 level for this crime. In short, the big bulge in the grand total of reportable offenses was caused by a marked rise in burglaries and auto thefts, particularly the latter. There was a high probability that many of the crimes against property were motivated by the relative scarcity of many articles during and immediately following World War II. The great and sudden rise of auto theft in 1945, which quite closely coincided with the removal of gasoline rationing, seemed to be especially significant.

Certainly there was no evidence of personal hardship or dire economic need, as a major contributing factor in this postwar upswing. On the contrary, the available data were such as to lead to the conclusion that personal indulgence was of far greater importance in crime motivation during the postwar period. While the moralist might condemn such influences, the long-range observer of criminal trends, reconciled to the inevitability of crime under any and all conditions, was heartened by the thought that when the industrial machine again produced luxury goods in large quantities, the urge to secure them through theft rather than purchase would be materially weakened.

In one respect, however, there was substantial increase not likely to be followed soon by a recession. It consisted in the fact that the average dollar loss for crimes against property rose steadily throughout the ten-year period. Contrasts shown in Table III reflect not only increased dollar values of certain stolen articles (as for example motor cars), but also the greater amount of money and other wealth



Delinquent boys attending class at an experimental mountain camp sponsored by the city of Los Angeles. The boys studied forestry and governed their own community under the guidance of trained psychologists

that was open to attack under an inflated wartime economy than was available during the prewar depression years.

Table III.—Average Dollar Value of Property Stolen; by Type of Crime; 1937, 1945

																								1937	1945
Robbery .																									\$146
Burglary .	•	•	•	•	•	٠	•	٠	٠	٠	٠	•	٠	٠	٠	٠	٠	•	٠	•	٠	٠		59	118
Larceny .	٠	•	•	٠	٠	•	٠	•	٠	•	٠	٠	٠	٠	•	٠	٠	٠	٠	•	٠	٠	٠	29	.54
Auto theft	٠	•	•	٠	٠	٠	٠	٠	٠	٠	•	٠	٠	٠	٠	٠	٠	٠	٠	٠	٠	٠	•	3,33	605

Total 1945 losses caused by property offenses averaged about \$1.81 per capita in cities of more than 25,000 population; in 1937 the average was only \$1.15 per capita, though here again the effects of monetary inflation must be held partly responsible for the rise. Recoveries in 1937 averaged 64.6%. By 1944 they had risen to 71.3% and in 1945 totalled 68.8%. Net losses were substantially reduced thereby.

The loss-burden falling upon various types of property is shown in Table IV. These percentage distributions showed little change from year to year during the decade. The heavy preponderance of losses for stolen cars is readily understood, but the relative importance of the "miscellaneous" category requires a word of explanation. In general it includes such high value articles as typewriters, business machines, firearms, automobile accessories, tools, machinery, furniture and fittings, plumbing, liquor and tobacco.

Table IV.—Types of Property Losses; Per Cent of Total_

Type	οĺ	f P	ro	þ	erf	y																			Per cent of Loss
Currency, not	e	5, 6	etc				•	٠																	12
Jewellery and Furs	i	pr	eci	0	US	m	et	als	٠	٠	٠	٠	•	٠	•	•	٠	•	٠	٠	•	•	•	•	9
Clothing	:	:			•	:	:	:	•	•	•	•	•	•	•	•	•	•	٠	٠	٠	•	٠	٠	2
Automobiles																									60
Miscellaneous	٠	٠			•	٠	٠	٠	•	•	•	•	٠	•	•	•	٠	•	٠	•	٠	•	٠		13 .
Total .									•																100

Further analysis of robberies, burglaries and general larcenies committed in U.S. cities tended to emphasize the fact that these crimes were rather heterogeneous in their nature, even though their definition by statute might be in a long-established common terminology. Thus Table V shows how certain types of these crimes fluctuated during the critical war years, and particularly how some rose sharply despite a general downward trend (for example, bank robberies and major larcenies) while others fell when the general trend was upward (as in the case of bicycle thefts). Notable, too, was the rapid change in the direction

of certain of these crime trends. Some appeared to be closely related to wartime changes in the U.S. scene itself. Thus the extraordinary drop in the number of oil station robberies in 1942 and 1943 was perhaps related to the reduction in the number of such business ventures caused by gasoline rationing, thereby reducing the number of robbery exposures. After two almost vertical declines in the early war years, robberies of the special type remained at a low level in 1944, and then rose to a point close to the old levels when gasoline rationing was discontinued in 1945.

Table V.—Annual Percentage Change in Frequency of Certain Offenses Classified by Time and Place and Other Characteristics; 1942–45

	1942	1943	1944	1945
Robbery				
Highway	+11.5 -19.8	+5.6	+ 1.4 -13.0	+ 20.7 + 27.1
Oil station	-35.2	-72.7	+ 6.6	76.9
Chain store	-50.7	-13.0	+ 5.8	+ 10.3
Residence	+5.6 +40.0	+1.5	+ 3.3 -47.8	+ 15.9 +171.4
Miscellaneous	+ 7.1	+20.3	-29.9	+ 10.3
Total	- 1.7	- 3.2	- 2.0	+ 22.2
Burglary				
Residence				
Night	- 9.2 -18.8	-10.6 + 7.2	+ 6.2 - 0.8	+ 18.2 + 14.1
Non-residence		•		
Night	- 2.3 -19.7	+ 9.4 0.0	+ 4.3 - 3.2	+ 19.6
				+ 10.0
Total	<u>- 8.2</u>	+ 2.0	+ 3.7	+ 18.0
Larceny (not including auto theft)				
\$50 and over	+10.3 -5.1	+18.8 - 9.8	+22.9 - 1.0	+ 20.8 + 3.7
Under \$5	-20.1	-13.0	-12.0	+ 9.3
Total	- 6.7	- 6.5	+ 0.9	+ 7.8
			7 0.7	T /.0
Larceny (not including auto theft) Pocket-picking	+15.6	+39.5	+ 1.6	+ 0.7
Purse-snatching	-21.2	+22.9	T 1.3	+ 8.5
Shoplifting	+ 9.2	- 6.2	-12.9	+ 6.3
Thefts from autos	-23.2	- 9.7	+ 8.9	+ 24.6
Auto accessories	-17.3 +10.1	-56.4 - 6.3	+40.4	+ 7.3
All others	- 0.4	-0.3	-14.7 + 0.2	- 4.2 + 8.1
Total	- 6.7	- 6.5	+ 0.9	+ 7.8
			- 0.9	7 /.8

Similar rapid changes in the number of bank robberies were partly due to the small number of such crimes, with consequent wide swings in percentage of rise or fall.

Of all persons arrested and fingerprinted during 1945, 57% were taken into custody outside the state of their birth. While this stood in striking contrast with the 42.5% similarly recorded for 1937, it may fairly be questioned whether the increase was anything more than a reflection of the wide dispersion of war workers and their families which reached a climax in 1945. It seemed to be a reasonable assumption that home ties made for law observance, and their severance for law infractions, but only specific rates could establish the relationship. Since the difficulties inherent in securing the data for such rates were probably insurmountable, the question promised to remain unanswered.

The proportion of persons arrested and fingerprinted, who were found to have a record of previous arrest or conviction, also increased notably during the decade. In 1937 those with previous criminal records constituted only 42.4% of the total whereas 51.9% were so classified in 1945. Here again, however, extreme caution had to be exercised in drawing conclusions that recidivism was increasing. If such comparisons held any validity, then the increase was very great indeed during the 25 years following World War I; because the early 1920s saw scarcely more than 25% of such identifications. The very strong probability, however, was that there had been no large net increase in recidivism, and perhaps none at all, with the striking changes marked by the foregoing figures representing merely the vast improvement in identification resources

particularly through the formal establishment of a nation-wide clearinghouse for identification records in the Federal Bureau of Investigation in 1930. This great national facility by 1946 had expanded to a point where it included the criminal record of all, or nearly all, the criminal characters passing through the official channels of police, prosecutors, courts, jailers, prison wardens and probation and parole authorities. Hence there was reason to believe that the net rise in the proportion of previous criminal records merely reflected the vast improvement in identification reporting. Measured by such standards, the specific rate for recidivism was two-thirds more common among males than among females.

Arrests of males under 21 years of age were 7.3% less numerous in 1945 than in the prewar year 1941; but if specific rates were applied to those in this youthful age bracket who were actually within the United States in these two respective years, it would be found that the arrest rate for young males was much higher in 1945. Of female offenders during these war years, it may be said that even the crude totals of arrests showed an increase of almost 110%—a fact that would surprise no one who had followed the activities of "victory girls" and their ilk. Still there were, even for such as these, certain firm indexes of a return to more normal levels, particularly in the fact that in the last of the war years female arrests decreased for all ages up to and through 20 years. In short, female delinquencies were beginning to recede at their source.

The end of the decade found the United States taking stock of its crimes and criminals and seeking to determine the extent and significance of both.

It appeared that for the country as a whole, the 8 reportable offenses listed above exceeded 1,500,000 per annum. The most numerous single crime category was larceny, which accounted for more than one-half of the total. About 95% of all reportable offenses were committed against property (larceny, burglary, auto theft and robbery) while the four reportable crimes against the person (murder, manslaughter, aggravated assault and rape) provided the total of the rather modest remainder.

Among geographic divisions, the greatest and smallest postwar increases were as shown in Table VI.

Table VI.—Postwar Changes in Geographic Distribution of Crime

Offenses	Greatest Increase	Greatest Decrease or Smallest Increase
	Mountain +26.1%	New England -5.3%
Manslaughter by negligence Rape Robbery Aggravated assault .	Pacific +42.7% Mountain +27.1% West North Central +54.2% New England +28.9%	South Atlantic -4.5% West North Central -6.3% South Atlantic +9.0% West South Central +1.8%
Burglary; breaking or entering Larceny Auto theft	West South Central +24.6% West South Central +13.7% West North Central +30.1%	South Atlantic +12.3% South Atlantic +1.0% South Atlantic +8.9%

Of possible significance was the fact that the areas west of the Mississippi, which had seen some extraordinary population increases during war industry migration, also showed the largest increases in most crime categories. On the other hand, the South Atlantic states, from which large numbers of Negroes had been attracted by the high wages paid by war industries of the north and west, enjoyed a prominent place in reducing the amount of crime or moderating its postwar increase.

Up to a point shortly before World War II, the number of crimes in relation to population generally varied directly with the size of cities. In other words, the largest cities not only had the most crimes, but the highest crime rates, and this relationship held right down through the various population groups of cities. With the dislocations

of war, however, one major change occurred. Cities of more than 250,000 lost first place in all crime rates except rape and robbery, while cities from 100,000 to 250,000 population showed the highest rates for murder and manslaughter, aggravated assault, burglary, larceny and auto theft. The new relationship held with such amazing consistency during the four war years 1942-45 inclusive, as to raise a question whether the change might have been warconnected. One possibility was that the shift of population induced by the rise of war industries more greatly affected cities of the second magnitude, thus not only producing a certain amount of distortion in the crime rates, but also actually burdening such second class centres with a disproportionately large floating population. As elsewhere noted, the latter seemed more predisposed to criminal acts than the more static population groups.

Other relationships between certain classes of the population and the amount of crime were indicated by the age distributions among persons arrested and fingerprinted. In 1945, for example, arrests of males under 21 years of age were 7.3% less than in 1941, the last prewar year. During this same four-year period, however, arrests of females in the same age group more than doubled. Also apparent was a shift in the peak age for arrests in the three years 1937–39. The ages at which the maximum number of persons were arrested were 22, 21 and 19 years respectively, whereas in 1944 the peak ages were 17 and 18 years, and in 1945 age 17 had moved to a lead of about 5% over age 18.

Wider age brackets reflected similar changes. In 1937, 18% of all males and females arrested were under 21 years of age. By 1945, this group constituted 21% of the total. On the other hand, the age group 21–29 constituted 33.6% of all arrests in 1937, whereas by 1945 it had fallen to 28.4%. Since the absent generation in the military service was largely drawn from this age group, the decline recorded at the end of the period was not at all surprising.

A big feature, of course, was the marked rise in arrests of females under 21 years of age. Drunkenness was the most numerous of the charges brought against females, with sex offenses, vagrancy, disorderly conduct and auto theft following in that order. Together these offenses constituted about two-thirds of the total, and it will be noted that the active criminal element was either absent or a secondary consideration as to all of them.

Considerable emphasis was placed upon these shifts by both skilled and unskilled observers of the criminal scene in the United States, and some gloomy conclusions were drawn as to their meaning. For with the peak age of criminal activity at such youthful levels it was argued that the future of the U.S. commonwealth was indeed clouded. Such dark forebodings would probably not be realized, however, since many of the offenses entering into such tabulations were of a kind long associated with youth and its excesses, while an increasing public anxiety for the rising generation tended to increase the number of arrests for these typically juvenile offenses.

Moreover, there were already evidences in 1946 that with the passing of the extraordinary freedoms and fancies of the war years arrests of females in the age bracket from 18 to 22 were about to reverse the upward trend of the years 1937–45.

Still it would be folly to ignore the possible significance of such comparisons as the following: 35.6% of all persons arrested in 1945 were less than 25 years of age; but these young persons constituted 58.6% of those charged

with robbery, 65.4% of those charged with burglary, 49.6% of those charged with larceny and 80.3% of those charged with auto theft. The net result was that about one-third of the persons arrested constituted over one-half of those charged with the foregoing crimes against property. The ratio for each of these offenses was slightly higher in 1945 than in 1937, and in this special sense there was therefore more youthful crime at the end of the period than at its beginning. To conclude, however, that the increase, while modest, was also permanent, was to commit the same logical errors repeated by each succeeding generation. The plain fact was that youths are more prone to certain crimes than are oldsters. But youthful crime rates, while they occasionally rise, also recede. In the backwash of world conflict, social disorganization and currency inflation, youth's offenses bulked larger than usual, but with a return to more normal social and economic conditions a decline in youthful crime and delinquency was confidently anticipated.

The social and economic status of the Negro changed so greatly during the decade that comparative arrest data concerning the white and Negro races held special interest. In 1937, 383,306 whites were arrested and fingerprinted. In 1945, this figure had risen to 390,315. On the other hand, 100,662 Negroes were arrested and fingerprinted in 1937, and 145,571 in 1945. This contrast, great as it was, became even more striking when arrests among the two races were presented as specific rates. Thus, of each 100,000 Negroes over 15 years of age, 1,412 were arrested and fingerprinted in 1937. The corresponding rate for whites was 495. By 1945 the ratio for arrested Negroes had risen to 1,613, whereas that for whites remained unchanged.

Foreign-born whites, on the other hand, continued to show a low ratio of arrests, at a level less than half that for native whites, and even improved their relative position somewhat as the war period approached. Reliable and comparable data relating to crime and criminality among native whites of foreign parentage were not available, though special studies showed that their specific rates were inordinately high. For the purposes of these comparisons the native sons and daughters of the foreign-born were included with other native whites, thereby unfavourably affecting the crime record of the latter as a class.

The conclusions drawn from these major changes varied greatly. To some, the 14.3% increase in the specific rate of Negro arrests during the 1937–45 period was evidence of continuing social injustices; others contended that the Negro was abusing his new freedoms, while still others, with an eye on the migration from remote sections of the deep south to the teeming industrial centres of the north and west, sought to explain the higher arrest rates in terms of such displacements and readjustments. Whatever the true explanation might be, there could be no avoiding the importance of this development, and the postwar trend of Negro arrest rates was anxiously examined for the light it might throw upon an abiding problem.

Significant of the changes occurring between 1937 and 1945 was the relative frequency with which persons charged with various crimes were identified as having previous criminal records. Narcotic drug addicts consistently led all the rest in degree of such recidivism, but there were major changes as to certain other crimes. Especially notable were persons charged with drunkenness. In 1937 this group held 6th place with 46.4% of recidivism; by 1945 they had risen to 2nd place with 63.2%.

Similarly, violators of liquor laws moved from 14th place (38.8%) in 1937 to 8th place in 1945 (51.4%), while gamblers rose from 21st place in 1937 (27.6%) to 11th place in 1945 (48.7%). Not merely the rate of recidivism but the number of persons charged with gambling almost doubled during this period. Thus were the social and economic effects of transition from peacetime depression to wartime boom reflected not only in large increases in numbers of arrests for drunkenness, liquor law violations and gambling, but the proportion of repeaters in these "easy-money" offenses also increased.

On the other hand, two types of offenders showed marked declines in frequency with which previous records were identified. In 1937, persons charged with prostitution and commercialized vice were the 5th most frequent in point of recidivism (49.0%); by 1945 this category had dropped to 21st place (42.4%). Since the number of persons arrested for this offense had meantime doubled, it appeared that wartime observations on the non-professional sex delinquencies of "victory girls" were well established in fact. The sometimes related charge of vagrancy not only declined markedly in numbers (by about 30%) but also showed a very slight decline in degree of recidivism. In the latter respect it held 2nd place in 1937 (58.2%) but had dropped to 6th place by 1945 (56.9%).

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Crime in Britain.—In 1936, Great Britain was congratulating itself that crime among the higher age groups was declining and that its future control of lawlessness rested on its attaining a solution of the problem of the young lawbreaker. At that time there were about 100 murders each year. From a quarter to a half of the murderers committed suicide. Police efficiency was such that there were arrests in all the other cases except three or four a year, and it was usually patent that the police suspected the criminal in these instances but were unable to secure enough evidence to charge. The murderer was not, therefore, a police problem, though he reflected a social problem more vividly, expressed by the growth of the number of suicides to 5,223 in 1935.

The proportion of criminals in 1936 was represented by 370 out of every 100,000 men and boys being found guilty of some crime, big or little. The incidence among females was only an eighth of this. Of all indictable cases, almost three-quarters were stealing in one form and another. "Smash-and-grab" raids on shops were the most disturbing of those crimes that came to instant public notice. There were also widespread thefts of bicycles, cars and from automatic machines and meters. Though modern houses with many windows and low elevation gave easy chances to burglars, there was little increase in either burglary or housebreaking.

Police authorities speeded up the mobility of police largely in response to the increase in traffic offenses. It became a byword to point out that the police were not so much engaged in tracking down criminals as in keeping citizens in order. The police, however, introduced radio cars to catch the real criminals and sought the close cooperation of the public through the telephone. To "dial 999"—the call in London for Scotland Yard—was a popular innovation. The calls grew to 5,000 a month in London in 1945.

Before World War II the metropolitan police established the police college at Hendon in order to train officers for the force and to increase its administrative efficiency. It ran for five years before the war interrupted its work, and supplied higher officers to many British police forces. In 1938 the government, aware of the inadequacy of past legislation for dealing with the habitual criminal, introduced a comprehensive Criminal Justice bill which proposed to abolish imprisonment for young offenders, to abolish flogging as a punishment except for serious offenses in prison and to set up compulsory public hostels for the corrective training of young people, but the war did not allow this bill to go beyond its second reading.

The war also interrupted the yearly publication of the official Criminal Statistics for England and Wales. During the war itself, Britain was surprisingly law-abiding. By 1940, the prison population had fallen from 13,000 before the war to 5,000. By 1943, crime had reached its lowest rate in modern experience in Britain. In that year the number of robberies with violence during the blackout in the West End area of London was only 35.

Though rationing gave rise to black market (q.v.) operations, there was scarcely any highly-organized black market crime.

The turn came in the autumn of 1945; when the semblance of a "crime wave" occurred. It was variously attributed to deserters from the forces, the black market, a general lapsing into lawlessness at the end of the war and a shortage of trained police. The crime statistics of 1945, compared with 1939, showed a considerable increase in serious crime: penal servitude sentences were 541 in 1939, 741 in 1945; higher court sentences to imprisonment apart from penal servitude were 3,486 in 1939, 6,397 in 1945. In London during the first 9 months of 1945 there were 12,000 serious and petty crimes and for the same period of 1946, 11,000. (The comparative level before 1939 was 9,000.)

There were several big jewel robberies in 1945 and 1946, and particular mention must be made of the theft of the duchess of Windsor's jewels. In Oct. 1946 Ednam Lodge, Sunningdale, where the duke and duchess were staying during a short visit to Britain, was entered, and jewellery valued at between £20,000 and £25,000 was stolen from the duchess's boudoir.

The intruder escaped the eyes of special detectives and apparently entered by climbing a rainpipe to an open window.

The end of the war saw a fresh impetus among penal reformers for a firmer attempt to deal with the habitual criminal and the juvenile delinquent on medical and psychiatric lines. Psychiatry played little part in Britain's handling of its criminal problem and there was an absence of scientific data. It was recognized, however, that juvenile delinquency was the root problem, that police with high mobility could catch the criminal, and that considerable changes in the court treatment of him should be introduced in order to permit psychiatric examination of prisoners prior to reformative imprisonment. (See also CHILDREN IN WORLD WAR II; CHILD WELFARE; FEDERAL BUREAU OF INVESTIGATION; KIDNAPPING; LAW; LYNCHING; MARRIAGE AND DIVORCE; POLICE; PRISONS; SECRET SERVICE, U.S.)

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Crimea Conference (1945)

See International Conferences, Allied (World War II); Union of Soviet Socialist Republics; United Nations.

Cripps, Sir (Richard) Stafford

Sir Stafford Cripps (1889—), British statesman and lawyer, was born April 24, 1889, the youngest son of Charles, 1st Baron of Parmoor. He was educated at Winchester and University college, London, and was called to the bar in 1913. He was appointed solicitor general in Ramsay Macdonald's government in 1930 and the following year he entered parliament as Labourite member for East Bristol. He resigned when the national government was formed in 1931 and became one of the opposition leaders.

In June 1940, Churchill named him ambassador to Moscow-Sir Stafford had long advocated British-Soviet rapprochement. Recalled from Moscow in Jan. 1942, he became lord privy seal in the Churchill cabinet the following month. In March he was sent to India with the British "freedom proposals," which Congress party leaders rejected as inadequate; Sir Stafford, on the other hand, held the Congress chiefs responsible for the breakdown of negotiations. In Nov. 1942, he was named minister for aircraft production. Following the Labour party victory in the national elections in the summer of 1945, he was appointed president of the Board of Trade, and on Feb. 19, 1946, Prime Minister Attlee named him to a three-man mission to New Delhi to discuss measures for granting India self-government. After three months of negotiations, during which Hindu, Moslem and British government leaders failed to reach substantial agreement, the mission announced suspension of negotiations for an interim government, on June 26, 1946.

Croatia

See YUGOSLAVIA.

Crop Control

See AGRICULTURE.

Crop Insurance

See Agriculture.

Crowley, Leo Thomas

Crowley (1890?-), U.S. government official, was born in Milton Junction, Wis. Educated at the University of Wisconsin, Madison, Wis., he worked as a salesman for a paper company at the age of 20, becoming president of the organization at 23. He was regional administrator for the Farm Credit administration at St. Paul, Minn., and was chairman of the Federal Deposit Insurance corporation in Washington, D.C., 1934-39. Although he wanted to leave to assume an executive post with a utilities firm, he heeded Pres. Roosevelt's request to continue with the FDIC, again becoming chairman in 1942. In March of that year he also became Alien Property Custodian. After Pres. Roosevelt removed Jesse Jones and Henry Wallace from control of agencies dealing with foreign economic operations, he created in 1943 a new super-agency, the Office of Economic Warfare, and appointed Crowley administrator of this department in Sept. 1943. Because of the press of his other work, Crowley resigned March 24, 1944, as alien property custodian.

Crowley disclosed on May 12, 1945, that lend-lease to the soviet union had been suspended with the end of the war in Europe, but six weeks later (June 25), he revealed that the government had decided to continue lend-lease aid on a reduced scale to supply soviet forces in the far east. On

Sept. 27, 1945, Pres. Truman accepted Crowley's resignation as chairman of the FDIC and the FEA; the president also abolished the latter agency.

Crude Oil

See Petroleum.

Cruisers

See NAVIES OF THE WORLD.

Crushed Stone

See STONE.

Cryolite

Although small amounts of cryolite are used in glass, enamels, abrasives and insecticides, its chief use is in the electrolytic bath for the reduction of aluminum. Ivigtut, in Greenland, remained the only source of the natural mineral; synthetic cryolite had been made on a limited scale in Europe for a number of years, but it was not until World War II threatened a possible restriction of the natural mineral that the synthetic substitute received much attention in the United States. Three plants were built for the production of artificial cryolite, but as an adequate supply of natural cryolite was maintained, only one plant was operated.

Prewar imports averaging 15,000 tons a year, including possibly 10% to 15% of synthetic cryolite, were expanded by war demand for aluminum to a peak of 72,312 tons in 1942, declining to 17,562 tons in 1944 and recovering to 20,106 tons in 1945.

Cryolite was put under complete allocation and use control by the War Production board in Sept. 1942, but adequate supplies and stocks, coupled with a heavy reduction in aluminum output, permitted the removal of all restrictions in Oct. 1944.

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Crystallography

See MINERALOGY.

Csáky, Stephen

Count Csáky (1897-1941), Hungarian statesman and diplomat, was born in Segesvar, Hungary, and spent nearly half his life in the Hungarian foreign service. He embarked upon a diplomatic career in 1921, when he was appointed secretary at the Hungarian embassy in Rome. Three years later he was transferred to the Bucharest embassy, and subsequently was chargé d'affaires at Madrid and Lisbon. In 1934 he was appointed minister to Spain, and in 1938 he became foreign minister of Hungary. Csáky, an ardent revisionist, sought the return of territories wrested from Hungary after World War I, and shaped his foreign policy to that end. Convinced that the axis powers were destined to dominate Europe, he voiced vigorous approval of their policies and in return was rewarded in Aug. 1940, when Germany and Italy compelled Rumania to cede half of Transylvania to Hungary. In Nov. 1940 he signed the Rome-Berlin-Tokyo pact and shortly before his death he concluded a treaty of "perpetual friendship" with Yugoslavia. He died in Budapest, Jan. 27, 1941.

Cuba

A West Indian republic, Cuba includes the island of the same name, the Isle of Pines, and other minor islands and keys. The total area was variously stated by authorities to be 44,164 and 44,218 sq.mi.; the official Cuban census of 1943 stated that the exact extent was not known. The main island of Cuba is the largest of the four islands comprising the Greater Antilles. Pop. (1943 census), 4,778,-583. Population density for the whole republic, by the 1943 census, was 108.07 per sq.mi. The population was officially estimated in 1944 to include 75% white (of which approximately one-third was mulatto), 24% Negro and 1% Mongoloid (mostly Chinese). The capital and chief port is Havana (officially, Habana) with a pop. (1943 census) of 676,376 (including rural municipios). Greater Havana includes about 800,000 people and represents a cosmopolitan mélange including Spaniards, West Indians, Central Americans and Chinese. Other important cities (with 1943 census pop. unless otherwise indicated) are Santiago de Cuba (1946 est., 152,000), Marianao (a Havana suburb, 120,163), Camagüey (1946 est., 87,009), Matanzas (54,844), Cienfuegos (52,910), Guantánamo (site of a U.S. naval base, 42,423), Cárdenas (37,059), Holguín (35,-865), Manzanillo (36,295), Ciego de Avila (29,130), Santa Clara (27,925), Pinar del Río (1946 est., 63,461), Regla (23,037), Güines (22,669), Guanabacoa (30,287), and Placetas (19,693).

Presidents during the decade 1937–46 were Dr. Federico Laredo Bru (1936–Oct. 10, 1940); Maj. Gen. Fulgencio Batista y Zaldivar (Oct. 10, 1940–Oct. 10, 1944); Dr. Ramón Grau San Martín, after Oct. 10, 1944.

The Power of Col. Batista.—The tempo of Cuban political life levelled off considerably beginning with 1937, after a very disturbed period dating from the ousting of Pres. Gerardo Machado in Aug. 1933. Between that event and the beginning of 1937, several presidents had been in power for short periods, practically all of them at the sufferance of Col. Fulgencio Batista, chief of the constitutional army and leader of the so-called "sergeants' revolt" in Sept. 1933. The latest of these presidents had been Mariano Miguel Gómez, the first elected president in several years, who held office only from May to Dec. 1936; when he refused to approve a Batista-inspired law which placed rural education under control of the army he was impeached, at Batista's virtual direction, and removed from office. The vice-president, Dr. Federico Laredo Bru, then assumed office and completed the term, proving amenable and acceptable to Col. Batista. The year 1937 was thus featured by more open military domination of the government, after the attempt at civilian supremacy under Gómez. The year was also characterized by increased sentiment against foreign business and an extensive and ambitious "three-year plan" for the nationalization of industry. The first months of 1937 saw the elimination of Gómez partisans from official positions, with important changes in the presidency of the chamber of representatives and in the diplomatic representation at Washington.

The government made continued efforts to improve the status of labour and industry at the expense of foreign enterprise. A previous law had required that a minimum of 50% of the pay roll in each establishment must go to Cuban nationals. The congress in May 1937 enacted legislation raising the minimum to 60% in spite of bitter protests by foreign concerns that the new law made it difficult to obtain adequately trained highly technical personnel. U.S. business firms also levied sharp criticism against the Cuban government because of the signing of a

commercial treaty with Great Britain on Feb. 19, by the terms of which British nationals were granted special exemptions from labour laws and most-favoured-nation status, except as against the United States. Cuba, by the terms of the treaty, gained most-favoured-nation status in British markets, except as against the British Empire. The Cuban government further reflected a nationalistic labour policy by the deportation, in February and March, of several thousand Haitian, Jamaican and other West Indian labourers. The Cuban national credit was greatly enhanced by a decision of the supreme court on June 2 upholding the validity of \$60,000,000 in loans made by the regime of Gen. Gerardo Machado prior to his ousting in 1933. The loans had been contracted primarily for the financing of the great Central highway and the \$18,000,000 national capitol, and had been placed chiefly in the United States. After the ousting of Machado, the issues had been repudiated on the grounds of unconstitutionality, but the supreme court held them to be legal obligations. Financial interests and the Cuban government tentatively agreed on a plan in Dec. 1937 for the issuance of new bonds to replace the old ones.

Col. Batista in July 1937 announced an ambitious program of social and economic reorganization, the so-called three-year plan. This program embodied in one form or another most of the reforms that had been advocated after Cuba became independent 35 years before. With announcement of the plan, Batista and the army emerged openly as the main power in Cuba. The army, which Batista had enlarged considerably even above the increased size maintained by Pres. Machado, had previously obtained control of some schools, had built roads and hospitals and had intervened in congressional politics, especially in the case of the impeachment of Pres. Gómez; the three-year plan was a culmination of this varied activity. It included a 20-point legislative program designed to regiment almost every phase of national life. Among its proposals were governmental reorganization and regulation of the sugar and tobacco industries (the chief agricultural enterprises in the island), reform of banking and currency and of the tax system, increasingly nationalistic labour legislation, reforestation and development of water supply, distribution of state-owned lands, establishment of consumers' and marketing co-operatives, regulation of mining and oil production, reform of the judiciary, creation of a merchant marine, a vast health and education program and "nationalization" of property rights. The general public, in the opinion that the plan was too grandiose to be financed or executed by the government, was largely apathetic. Great confusion and bewilderment prevailed in business circles, however, upon announcement of the plan. The congress was plunged into turmoil, and within a few weeks the alarm felt by business interests had resulted in the shipment of more than \$30,000,000 abroad. In spite of the confused reaction, the government did, however, make considerable progress on certain phases of the plan before the end of 1937. A law enacted in August under government pressure attempted to introduce co-ordination of the vital sugar industry by granting sugar growers a fiveyear debt moratorium and providing for agricultural credits. When the congress reconvened on Nov. 1, 1937, after a six-weeks recess, Pres. Laredo Bru recommended rapid action on banking reorganization, and also suggested further tightening of labour legislation in order to give greater protection to the working classes. An act passed in December provided for distribution of state-owned lands to tenant farmers.

The problem of providing machinery for the elections



Fulgencio Batista (right) being sworn in as president of Cuba Oct. 10, 1940, at the presidential palace in Havana

of March 1938, for the renewal of half the seats in the chamber of representatives and for members of a proposed constituent assembly, was of perhaps greater concern to the congress than that of implementing the controversial three-year plan. Congress by Dec. 1937 passed an emergency electoral code in spite of vigorous opposition from minority groups in both houses. Another vexing problem before the congress was the question of amnesties for political prisoners and exiles. Students of the politically conscious University of Havana rioted in the senate chamber on Nov. 24 when the upper house adjourned without considering a political amnesty bill which the chamber of representatives had passed in a previous session. Former Pres. Machado was arrested in New York City in the meantime at the request of the Cuban government, which asked his extradition in order that he might be tried for the many crimes charged against him. While proceedings were pending against Machado in the United States, Col. Batista expressed himself as not opposed to a general amnesty; the senate hence took up the pending amnesty bill and passed it, with broadening amendments, on Dec. 20. The bill as finally approved was so sweeping as to embrace all political offenders, including some persons under the death sentence; it likewise covered many criminal offenses. In view of the broad terms of the act, the government dropped its charges against Machado, who had been in exile since 1933. When the act became effective on Christmas Day, 1937, 90 prisoners were released; additional releases followed.

Batista's political strength was manifested in the congressional elections on Mar. 4, 1938, in which 81 representatives and 1 senator were chosen. The 450 candidates nominated by 7 parties were all avowed supporters of Batista and the three-year plan, which had by that time become indelibly linked to him; opposing parties held aloof from the election. A brief cabinet crisis occurred in August, as a consequence of which all members of Laredo Bru's cabinet resigned so that new appointments might be made along ostensibly nonpolitical lines. On Feb. 4, 1938, Laredo Bru sent to the congress a recommendation for the liquidation of the Cuban public works obligations, which had been in default since 1933 along with other items of Machado indebtedness. The congress on Feb. 14 passed a bill authorizing an \$80,000,000 bond issue with

which to retire the outstanding public works bonds. The effort of the government to settle its defaulted and repudiated debts was a preliminary to the proposed establishment of its own bank of issue and an independent currency. The first distribution of government-owned lands to tenant farmers was made in March 1938, with 50 ac. allotted to each of 250 farmers. Those receiving the lands were required to occupy and cultivate them for at least six years. The farms could not be encumbered or sold, and were transferable only by inheritance. The exposure in March of an alleged conspiracy against the government indicated some popular unrest. Four men were killed when soldiers surprised a meeting of plotters; seven persons were later convicted of conspiracy and received prison sentences of three years each.

Upon the opening of the congress in April 1938, Col. Batista began actively to urge the adoption of laws called for by his three-year plan, but on May 4 he suddenly and unexpectedly announced the suspension of the muchpublicized plan until the long-agitated constituent assembly could be convened to provide the republic with a new constitution. He declared in his dramatic statement that he was sacrificing his plans for the social and economic reconstruction of Cuba in the face of the general demand from all parties for a free and sovereign constituent assembly. Observers considered that this sudden withdrawal of the three-year plan was a masterly political manoeuvre in that it threw all responsibility for the halting of the reforms on the shoulders of the political opposition. Another of the important events of 1938 was the launching of a \$6,000,000 public works program as a means of relieving unemployment, the funds to be obtained by a 10% reduction in government expenditures. The plan called for the repatriation of an estimated 50,000 West Indian labourers and the tightening of immigration laws, the adoption

Cubans demonstrating against the axis during the 1942 May day celebration in Havana



of wage regulation and further control of relations between employers and workers.

Laredo Bru, as a part of the administration's policy of cultivating the good will of the United States, signed on July 1 a congressional bill making July 4 a Cuban official holiday, to be celebrated as a demonstration of friendship for the United States. A further indication of a desire to collaborate with the United States came in Col. Batista's announcement in Nov. 1938 of willingness to co-operate in providing a haven for refugees from Germany; this development was a consequence of the Evian refugee conference some months earlier and the effort of the U.S. government to find homes for European displaced persons. Batista went to Washington in November, in the course of which trip, his first outside of Cuba, he joined Pres. Roosevelt in Armistice Day ceremonies at Arlington cemetery and later conferred with him at the White House. The attention Batista received in the United States brought him a revival of what had appeared to some observers to be a waning popularity in Cuba, caused by the island's economic distress. His popularity was further increased by the announcement made at Washington of the reduction of the U.S. tariff on sugar in consideration of an oral agreement on Cuba's part to throw open its markets to U.S. agricultural and manufactured goods, especially Louisiana rice. The U.S. Export-Import bank at the same time announced a loan of \$50,000,000 to Cuba to be used in advancing the country's public works program, especially projects of military and naval value to both countries.

Temporary Eclipse.—Batista's power and popularity underwent a temporary diminution in 1939 because of growing dissatisfaction with the policies of the regime, augmented by the badly depressed economic situation. The elections held Nov. 15 for the choice of members of the constituent assembly marked the worst defeat of Batista's political career. The government parties elected 35 of the 76 delegates, while the opposition elected 41. Batista gained prestige from one feature of the election, however, by winning general praise, even from his opponents, for the honesty and fairness with which the election was conducted. The status of the assembly from the legal standpoint was obscure. Government spokesmen insisted that it had power only to draft a new constitution, while the opposition claimed that it represented the sovereign will of the people and should be the supreme governmental as well as constituent power in the nation during the period of its functioning.

The imminent presidential election of 1940 was clarified in one respect early in Dec. 1939 when Col. Batista resigned his post as minister of war and formally announced his candidacy for the presidency; uncertainty had previously existed as to the part Batista would play in the election. Batista was nominated by six parties—the Liberal, Nationalist Union, National Democratic, Democratic Republican, National Revolutionary and Revolutionary Communist—which united for the purpose as the Social Democratic coalition.

Cuba established the first income tax in its history in a new tax law passed in 1939, which increased a number of other taxes. Charges of profiteering by raising the prices of prime necessities were filed against a number of Spanish, Chinese and Cuban merchants; in order to forestall any recurrence of such attempts, Laredo Bru signed a decree Sept. 9, setting maximum prices for certain essential foodstuffs.

Cuban developments in the field of foreign affairs were dominated in 1939 by the approaching and then the actual war. When the German steamship "St. Louis" arrived in Cuban waters in May and attempted to discharge 907 Iewish refugees from Germany, the vessel was refused permission to land its passengers on the ground that their papers were not in order. Laredo Bru ordered the ship to leave immediately, but fear of suicides among the despairing passengers caused the president subsequently to grant conditional permission to land the refugees on the Isle of Pines, where they might be kept in a temporary concentration camp. The reversal of decision came too late, however, as the ship had already begun the return trip to Germany, having found no other port at which it could discharge its passengers. Laredo Bru issued a proclamation upon the outbreak of the war in September declaring that Cuba would maintain strict neutrality. The government asserted itself favourable to any plan for the collective neutrality of the Western Hemisphere, and Cuba took a prominent part in the first inter-American foreign ministers' conference held at Panama in Sept.-Oct. 1939. The president later asked the congress to grant him special emergency powers to cope with the problems resulting from the outbreak of the war in Europe.

The constituent assembly formally opened its sessions on Feb. 9, 1940, under the presidency of Dr. Ramón Grau San Martín, provisional president of Cuba for five months in 1933-34. Under frequent charges of dilatoriness as the months passed, it proceeded to consideration of a draft constitution submitted to it. The document, embodying 318 articles and long transitory provisions, was officially adopted on June 8. The new constitution was drafted in great detail; it was some six or seven times the length of the U.S. constitution and was much the longest basic law of any Latin American state. (See below.)

Batista President.—The presidential election of 1940 developed into a clear-cut contest when opposition groups nominated Dr. Grau San Martín as their presidential candidate. The bloc supporting him included his own party, the Revolutionary Cuban (more widely known as the Auténticos), the A.B.C. and the Republican Action. The election was held July 14, 1940, and was accompanied by small but spectacular disorders. Col. Batista won easily, although charges of fraud were freely made, and formal investigation of alleged election irregularities was necessary before his election could be finally certified. Legal, battles over congressional and other election results were so common and complicated that the congress was unable to obtain a quorum on its constitutional date of assembly on Sept. 15. Some elections were not decided until late October. The new president was inaugurated Oct. 10. His greatest political problem was to give adequate recognition to the varied and seemingly irreconcilable groups which had supported him in the election. His cabinet, for this reason, included 14 members, 4 of them without portfolio. Difficult economic problems, especially financial, confronted Pres. Batista, because of the unbalance caused by World War II and by efforts to protect the national

An act of alleged "appeasement" took place ten days after the presidential elections. This was the legalization by the government of the Falange Española, a pro-fascist organization closely linked with Franco Spain. The Falange had been outlawed in Cuba during the Spanish Civil War in order to preclude disorders and controversy between its members and adherents of the Spanish republic; the problem of Falange activity was especially serious in Cuba because of the large numbers of Spaniards, representing both factions, present in the republic. The Falange was given legal recognition in Cuba after it had amended its internal organization to conform to constitu-

tional requirements. Such recognition aroused vigorous public disapproval, however. Another pro-axis group, the Cuban nazi party, was dissolved in September by order of the governor of Havana province. Cuban sympathies continued to be predominantly in favour of Great Britain in the struggle against Germany, and in Nov. 1940 it was formally advocated in the congress that a gift of 300,000 bags of sugar be made to British civilians. The Cuban government, under both Laredo Bru and Batista, gave virtually unqualified support to U.S. policy as regarded the war. The second Inter-American foreign ministers' conference was held at Havana in July 1940, following the fall of France. Its main topic of discussion, the "provisional administration" of European possessions in Middle America in the case that nazi Germany should attempt to assume possession of French, Dutch and perhaps British colonies, was of peculiar interest to Cuba because of the closeness of some of those possessions to its own territory. The Cuban government subsequently facilitated development of defenses. As in the United States, compulsory military service was authorized, and extensive increases in the air force were approved.

The first serious challenge to Batista's authority as president was successfully met early in 1941. Long-standing friction had existed between Batista and high-ranking military and police officers, especially Col. José Pedraza, chief of staff of the army, Col. Angel A. González, chief of staff of the navy, and Col. Bernardo García, Havana chief of police. Batista's discharge of García on Feb. 1 precipitated a crisis in which Pedraza virtually demanded Pres. Batista's resignation under threat of setting up a military dictatorship. Batista thereupon manoeuvred himself quickly and smoothly into full and direct control of the country's armed forces, arrested Pedraza, González and García, and, on Feb. 4, exiled them to Miami, Fla. He had in the meantime suspended constitutional guarantees for 15 days, but 2 days later, with the short-lived crisis virtually over, they were restored. Pres. Batista exploited this threat as proof that civilian authority must be supreme over the military.

A less spectacular but more serious threat to Batista's authority was the continuing congressional criticism and obstruction. The first clear-cut indication was the refusal by the congress to pass the 1941 budget, thus necessitating extension of the 1940 budget. The administration was also severely criticized in the congress for its alleged failure to take adequate measures against pro-fascist elements in Cuba. The Spanish consul general, Genaro Riestra, who had earlier been expelled from Mexico on charges of disseminating axis propaganda, was the centre of this controversy. Riestra was reputed to be the head of the Cuban branch of the Spanish Falange. He subsequently was declared persona non grata and was asked to leave the country, as was the Spanish commercial attaché. A local leader of the Falange, Francisco Alvarez García, as well as two other members, were taken into custody and charged with antidemocratic activities but were subsequently acquitted because of insufficient evidence. Popular sentiment in Cuba, following the lead of the United States, was strongly sympathetic with the Allies, and the government generally reacted in the same direction. Pres. Batista in Jan. 1941 issued a decree designed to curb totalitarian propaganda; the Falange on Feb. 13 was ordered to close its soup kitchens and welfare agencies; three days, later, all German and Italian consular officials were ordered to leave the country before Aug. 25. The bombing,

on Aug. 18, of several Spanish-owned shops, with serious injury to 12 persons, was a concrete indication of strong anti-fascist feeling.

Obstructionist tactics employed by opposition congressmen prevented consideration, before the end of the regular session of the congress on May 27, of a number of measures the administration deemed urgent. Batista therefore called a special session of the congress for July 14 to consider tax reforms made more important by the serious budget deficit and to authorize negotiation of a \$25,000,000 loan from the U.S. Export-Import bank. Batista in the meantime determined upon a reorganization and enlargement of his cabinet to try to offset congressional opposition resulting from patronage disputes. The new cabinet had 11 old and 7 new members, but its creation failed to quiet the opposition; a brawl on the senate floor on Aug. 4 involved some 20 persons. In spite of the continuing political crisis, however, the special session approved a general increase of 20% in all taxes before its adjournment. The next regular session, opening Sept. 17, voted to consider approval of the proposed Export-Import bank loan, and a law authorizing negotiations to that end received presidential approval on Nov. 21. Proceeds of the loan were allocated to highway construction and repair and to an agricultural program aimed at diversification and improvement of irrigation facilities.

The rising cost of living resulted in serious labour problems in 1941. The opening of the grinding season for sugar early in the year was endangered by a strike threat. Sugar planters desired a lower wage scale, but the labourers insisted that the scale established in 1940 should be extended. This first controversy was solved by Pres. Batista, who pegged wages at the previous level but provided for a downward scaling of wages should sugar prices decline. Strikes spread to other industries in Cuba, and 700 employees of wholesale food and liquor companies walked out in October when their demands for increased wages were refused. The entire problem of wages came to a head in November when labourers refused to work in the sugar mills unless they were granted wage increases. Batista again intervened, decreeing a blanket wage increase of from 10% to 25%.

Prompt War Declaration.—Cuban relations with the United States continued close throughout 1941. The two governments in November concluded a lend-lease agreement. Following the Japanese attack on Pearl Harbor, Cuba declared war on Japan on Dec. 9 and on Germany and Italy on Dec. 11.

Cuba's attitude toward Spain remained unfavourable, and the Spanish embassy was forbidden the use of code in its cable and radio messages because of the belief that this might facilitate axis activities. The government forbade all foodstuffs shipments to Spain and also the provisioning of Spanish ships in Cuban ports. Count Carlos de Bailen, a former Spanish representative to Panama who had been ousted from that republic because of pro-fascist utterances, was arrested in Cuba and later deported. A nazi spy was captured and sentenced to death in September. Cuba broke relations with the Vichy French government on Nov. 10, 1942, and by executive decree, froze French goods and funds. The U.S.S.R., however, was granted recognition on Oct. 11; Maxim Litvinov, Soviet ambassador to the United States, was later also accredited to Cuba. Batista in December made an official visit to Washington; conversations concerning the sale of Cuba's 1943 sugar crop, and priorities for irrigation and refrigeration machinery badly needed for Cuba's agricultural development, presumably formed an important part of his program there.

As part of Cuban co-operation in hemisphere defense, U.S. air forces were allowed the use of Cuban fields. The Cuban government in June 1942 began control of the movement of U.S. currency, difficult because so much circulated in Cuba. In September, Cuba and the United States signed a military agreement further integrating their war effort. Cuba signed a mutual defense pact with Mexico on Oct 3 by which joint use of facilities was pledged to combat axis submarines in the Caribbean and the Gulf of Mexico. Despite Cuba's active defense program, U.S. Ambassador Spruille Braden stated his belief that remote spots on Cuba's extensive coastline were being used as secret submarine bases. The Cuban army was greatly strengthened during the year, at first on a volunteer basis and later by compulsory military service; 400,000 Cubans between the ages of 18 and 50 began registration Aug. 1. The government increased defense appropriations and sent some air and naval officers to the United States for training. It established news and mail censorship in April, created a Cuban maritime commission in July, and ordered a census of all vessels more than 20 ft. in length in

No serious upheavals, meanwhile, occurred in Cuban domestic affairs. The congressional elections in March 1942 returned a comfortable majority for the administration's Democratic party. Pres. Batista undertook a reshuffling of his cabinet in June and in August; it remained largely Democratic, although somewhat wider representation was given to opposition parties in the constitution of the so-called "national unity" cabinet in August. One woman, Dr. María Gómez Carbonell, was appointed to the cabinet in June, the first woman to hold such a position. Opposition groups generally supported Pres. Batista's foreign policies but at times criticized his methods. Col. José Pedraza, exiled in Feb. 1941, was allowed to return in July.

An order dated Jan. 21, 1942, granted sweeping economic powers to the president. It gave him authority to regulate all mineral, agricultural and industrial production, control imports and exports, arbitrate labour disputes, fix prices and quotas and expropriate property of all kinds where necessary for the national defense. A shortage of circulating media existed early in 1942, and currency had to be imported from the United States. The government also made extensive loans for various purposes, and a special session of the congress in June considered the founding of a Cuban central bank to aid in fiscal operations. The serious shipping shortage affected Cuba severely, although air services provided by Pan American Airways increased during the year. Scarcities resulted in almost every aspect of Cuban life-in transportation, building materials and industrial supplies, consumer goods and foodstuffs; meat exportation was entirely stopped in April. The tourist trade, normally valued at \$12,000,000 annually, almost vanished. The government created various commissions to cope with economic problems, but it appeared during the summer that price stabilization and rationing were poorly enforced. Unemployment and rising costs of living caused much concern. Sugar plantation wages were raised 50% in the spring and government employees had theirs increased by 10% to 20%. A law passed in April forbade eviction of tenants from farms. The government also set a minimum price to protect tobacco growers. Cuban sugar was in great demand but was affected by lack of cargo space. The United States contracted to take

One of the reasons for the considerable concern felt in Cuba in the winter of 1942-43 over sugar prospects was the uncertainty as to whether the United States would await delivery of the 1,500,000 tons still held in Cuban warehouses before making payment. This doubt was removed by an agreement in Dec. 1942 by which Cuba was given 95% of the value of the unshipped sugar. Another problem was that not only would the United States have the stored sugar to draw on in 1943, but the same sugar would also substantially reduce available storage space. The two governments finally came to an agreement in Feb. 1943 to the effect that the United States was to absorb 2,700,000 short tons of the estimated 3,225,000 tons representing 1943 production; the amount taken by the United States was well under that of 1942. Improvement of shipping conditions early in 1943 made it seem likely, when Cuban representatives went to Washington for early negotiations over 1944 production, that most of the 1943 crop would be moved by the end of that year. An agreement in August pledged the United States to buy 4,000,000 short tons at 2.65 cents per lb., the figure for the previous years, although Cuba had desired a price increase because of higher wage levels and living costs. It was agreed, though, that a proportion of any price increase for sugar in the United States should be passed on to Cuba. Cuba had less success in trying to dispose of 100,000,000 gal. of molasses, as offered prices were lower than she was willing to accept, but it was expected by late in 1943 that most of the molasses could be converted into gin for new markets opened by the developing United States liquor shortage.

Cuban parties began preparations in 1943 for the presidential elections the following year. Batista, who was constitutionally ineligible anyway, announced early in the year that he would not be a candidate. The A.B.C. and Communist parties, formerly opposed to Batista, were given cabinet places in a reorganization in March. Some weakening of the government coalition developed in May when Vice-Pres. Gustavo Cuervo Rubio resigned to head a newly formed party. The leading presidential candidates appeared to be the Batista-favoured former prime minister, Carlos Saladrigas and Grau San Martín, Auténtico leader.

Diplomatic relations with Spain, somewhat strained in 1942, improved by midsummer of 1943 with agreement on a convention aimed at release of frozen credits dating back to the Spanish civil war and promising restoration of needed Cuban markets, especially for tobacco. Cuba concluded a new military and naval pact with the United States on Feb. 1 by which previous co-operation was strengthened. A treaty of amity with China was congressionally approved in January. Pres. Calderón Guardia of Costa Rica made a friendly official visit to Cuba in March. The new military training program began in 1943, and it was expected that 8,000 inductees would enter the army every 4 months. Shortage of officers led Batista early in 1943 to recall 48 former officers exiled since 1933. War conditions still affected Cuban economy in spite of bettered shipping. The government in July set price ceilings on various food items and on utility charges. In June it had created a board of economic warfare; a postwar planning group was established in August. A national food congress met in Havana in September, and Cubans interested in diversified agriculture continued to advocate erection of refrigerator warehouses and dehydration plants. The widespread shortage of fuels and of rubber and manufactured articles affected transportation and the volume of retail sales seriously.

Election of Grau San Martin.-The first five months of 1944 were occupied primarily with the crystallizing presidential campaign. Dr. Carlos Saladrigas y Zayas emerged as the favoured candidate, supported by a Socialist-Democratic coalition composed of the Liberal, Democratic, A.B.C., and Popular Socialist (formerly Communist) parties. Grau San Martín was supported by the Authentic-Republican alliance, including the Auténticos and the newly formed Republican party. Both coalitions endorsed the Cuban war policy, and the campaign hence revolved largely around personalities. The election on June 1 proved to be very orderly and free, in line with Batista's often repeated but frequently disbelieved promises. Grau San Martín was elected by a substantial majority, to the surprise of many observers in and outside Cuba. Rumours of a Saladrigas coup were current for a few days, but Batista soon declared his acceptance of the results and by that action and his conduct of the elections gained great prestige. Grau's followers won mayoralty contests in Havana and Marianao, but the Socialist-Democratic coalition carried most of the provincial and congressional elections. Grau visited both the United States and Mexico prior to his inauguration on Oct. 10, 1944; his reception by Pres. Roosevelt was very cordial, although pressure from the United States had helped force him out of the presidency in Jan. 1934. Grau, whose campaign had emphasized public honesty, made a sworn statement of his personal fortune prior to his inauguration, with the expectation of doing the same thing on retirement.

Pres. Grau's ambitious program included a complete reorganization of the fiscal system, improvement of education, encouragement of health, sanitation and highway projects and continued agricultural diversification. Cuba was hit in mid-October by the most severe hurricane in some 20 years. Advance warnings held down the loss of life but crop damage, especially near Havana, was heavy. The congress appropriated 5,000,000 pesos for relief and private sources contributed 600,000 additional.

The sugar crop for 1944, most of which was under contract to the United States, was one of the heaviest on record. The U.S. in January announced an agreement to purchase 800,000 short tons of invert molasses; arrangements were later made to buy 65,000,000 gallons of blackstrap molasses and 12,500,000 gallons of industrial alcohol, thus largely absorbing the 1944 crop. Negotiations with the United States over the 1945 sugar crop began in Washington in Aug. 1944, after some dispute in Cuba over the attempt of Cuban labour to obtain representation on the delegation. Arguing higher production costs, Cuba contended for a price up to 3.55 cents per lb. and a long-term contract, but the negotiations were stalemated for several months. Cuban labour unrest was considerable in 1944 because of the sharp inflation which price control machinery had been unable to check. The president decreed wage increases in several industries early in the year under a law which allowed him to raise wages on a cost-of-living basis. He set minimum wages for both urban and rural workers, effective in May, and also increased the army pay. A contributory retirement fund for sugar workers was likewise created. Batista in August decreed a general wage increase of 10% to 20% and at the same time froze all prices at the current level. Some labour agitation continued under Grau San Martín despite a determined effort to make price controls effective. Food shortages, especially in meat and dairy products, continued in 1944 and a tem-

porary beef subsidy, up to one cent a lb., proved necessary to obtain meat for Havana during the summer.

The decision of the strong Popular Socialist party (formerly the Communists) in Feb. 1945 to continue to back President Grau allowed the administration to retain a senate majority. Some loss of Republican party support was seen in December in the resignation of Minister of State Cuervo Rubio. Several plots were reported at various times, the most serious being one led in March by the former chief of staff, José Pedraza. Several political assassinations occurred during the year, and the government was severely criticized in some quarters for failure to maintain order. Batista remained away from Cuba on a leisurely trip through the other American republics, but his public statements on various occasions indicated that he was not through with Cuban politics. One statement, in August, that there was no possibility of agreement between himself and Grau, suggested that he would join the opposition when and if he should return to Cuba; on the other hand, rumours of a proposed criminal investigation of Batista administration acts were frequently heard in 1945. Reports of possible cabinet changes were frequent through the year but the only major reorganization, affecting four posts, came in October.

Sugar sales negotiations were of concern throughout the year. The contract covering the 1945 crop, incompleted at the end of 1944, was signed only at the end of March 1945. Meanwhile, shipments had in January been authorized in advance. The United States in March agreed to buy the bulk of the crop at 3.10 cents per lb.; the contract also involved substantial purchases of blackstrap and industrial alcohol and a guarantee to protect Cuba against price increases on basic foodstuffs shipped from the United States. Negotiations for sale of the 1946 crop, which started soon afterward, were quickly stalemated over inability to agree on purchase of the 1947 and 1948 crops.

Sentiment in Cuba, led by student groups and Communists, developed strongly in 1945 for a diplomatic break with Franco Spain. Both houses of the congress endorsed the idea in October, but the government refused to take the step, probably because few other American republics had done so. When Manuel Aznar, new Spanish ambassador to the United States, arrived at Havana in July en route to Washington, students stoned the Spanish embassy. Popular sentiment favoured recognition of the Spanish government-in-exile in Mexico City. Cuban commercial relations with Spain were bettered by a decree of April 23 releasing frozen Spanish credits. Cuba took a prominent part in the Mexico City Inter-American conference and the United Nations San Francisco conference in 1945, and ratified the U.N. charter in October. Grau announced in December that the Cuban contribution to U.N.R.R.A. would include 20,000 tons of sugar, \$1,000,000 in cash and certain technical aid.

Much labour unrest prevailed in 1945, due partly to inflation and to continuing shortages of goods; government price control proved largely ineffective. Strikes occurred in the sugar industry and in transportation and in most cases the government authorized wage increases. A July decree restricting employment of foreign technicians was of concern to foreign corporations. A serious drought early in 1945 added to the general hardship.

Sen. Miguel Suárez Fernández, an Auténtico, was elected president of the senate on Dec. 12, 1945, thus giving control of the senate to Grau's forces. Juan Marinello, formerly a prominent Communist leader, was chosen vice-president.

In the municipal elections June 2, 1946, Dr. Manuel Fernández Supervielle, the coalition candidate, was chosen alcalde (mayor) of Havana; Auténticos won numerous legislative and municipal seats. An attempted revolt at Camp Columbia, near Havana, on May 17, was easily suppressed. Most dissatisfaction during the year came from the excessive cost of living and from high taxes; Havana merchants on Mar. 7, 1946, demonstrated before the presidential palace demanding tax relief.

Cuba on Dec. 12, 1945, rejected the Uruguayan proposal for collective intervention as an inter-American policy. Political relations with the United States continued close. On Jan. 3, 1946, the United States returned control of the naval air base at San Julián to Cuba and other wartime bases were surrendered May 20, the anniversary of Cuban independence.

Cuba and the United States on July 22, 1946, signed a two-year sugar contract after negotiations of ten months. It provided for U.S. purchase of the 1946 crop, less retained quotas, at 3.675 cents per lb., with provision for price increases if Cuban food prices or the cost-of-living index increased; the 1947 crop was to be purchased at a price equal to the highest 1946 price; specified amounts of black-strap and industrial alcohol were to be purchased; and the United States guaranteed that no legislation harmful to the sugar industry would be adopted. (See also West Indies.)

(R. H. Fn.)

The New Constitution of 1940.—Cuba was administered under provisional statutes and by a Council of State from 1934 to April 1936, which was replaced by a congress of senators and representatives elected by the people. The constitution of 1901, ratified by a popular referendum during the United States occupation, had been replaced by another in 1928, compiled and imposed by the "cooperativist" oligarchy with the aim of curbing the powers of the elected representatives of the people. The people rose against it, and after five years of bloody street-fighting, the government of General Gerardo Machado was overthrown, congress was dissolved and a provisional government established; the latter abolished this constitution in Aug. 1933.

In Nov. 1939, 11 political parties, ranging from the extreme left to the far right, elected 79 delegates who discussed and agreed on the progressive Carta Fundamental (Fundamental charter) to form the new basis of government in Cuba, probably one of the most advanced in the Western Hemisphere. The constitution was put into effect on Oct. 10, 1940, by Pres. Batista, as the orders for transition by the Constituent Assembly required. The charter declared the complete sovereignty of the people of Cuba, free from the Platt amendment contained in the constitutions of 1901 and 1928, under which the United States of America had the right to political and military intervention in the internal affairs of the Republic. The Platt amendment had been disavowed by the revolution of Sept. 4, 1933, led by Batista, sergeant of the army at that time, and was abolished officially in 1934 by an accord between Presidents Roosevelt and Mendieta, of the United States and Cuba respectively. The new constitution abolished presidential re-election, removed the death penalty and made primary education obligatory and free. The National university became autonomous; official education had no religious influence. The right of employers, workers and other employees to form unions was recognized; the right to strike was given to workers and the right of lockouts to employers, and it was made obligatory for professional men to join their appropriate organizations. All citizens, unless physically or mentally unable,

were equally obliged to vote in the universal secret elections. Cuba, a lay state, continued to protect the practice of all religions, despite the vast majority of Catholics.

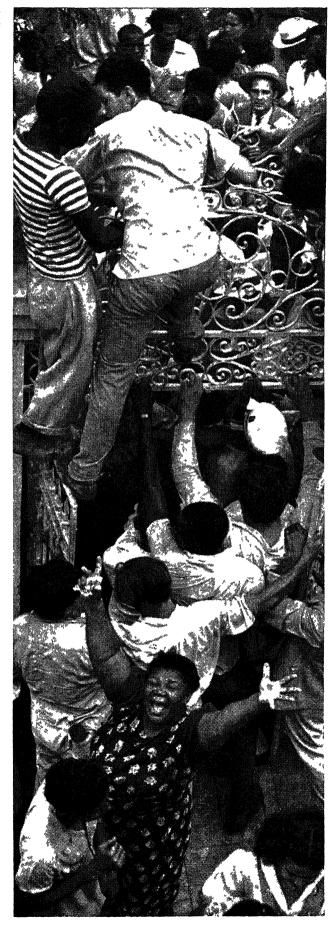
The Government became semi-parliamentarian, with three branches: executive, legislative and judicial. The first consisted of a president and a vice-president elected for four years. The president of the republic was to be assisted by a council of ministers—12 full ministers and up to 5 without portfolio whose number was to be fixed by law—headed by a prime minister freely appointed by the president, who as chief executive became supreme commander of all land, sea and air forces. The members of the cabinet were made responsible to congress for their actions, and congress could bring about a cabinet crisis by expressing lack of confidence in the cabinet or any member thereof, but it could not exercise this power twice within a period of six months.

The legislative branch was made up of the chamber of representatives and the senate. Congress was given the authority to sit in judgment of any president of the republic, cabinet minister, or governor accused by the chamber of representatives of breach of the constitutional limitation of his authority. The senate was to consist of 54 senators, or 9 from each province. The chamber was made up of 1 representative for every 35,000 inhabitants according to the census of the population, with one-half the membership renewed every 2 years. Congress was to meet twice every year regularly, and the two houses must remain in session not less than 60 days on both occasions; but the session of the senate and chamber combined should not last for more than 140 days. Both the president of the republic and congress itself acquired the right to agree to special sessions. Every citizen was to have the right to submit proposals for a legislative measure to congress, but the two houses were obliged to consider such a proposal only if the petition carried 10,000 signatures.

The power of the judiciary was vested in the Tribunal Supremo, the Tribunal Superior Electoral, and the other tribunals and judges established by the law. The judiciary profession was to be entered through competitive examinations, and advancement was to be made gradual through a system of step-by-step promotions. However, judges of the Tribunal Supremo, the Tribunal Superior Electoral, and the Tribunal de Garantias Constitucionales y Sociales were to be chosen by extraordinary selection without any decisive influence of the executive. The Consejo Superior de Defensa Social was empowered to carry out the decrees and measures of security relating to the deprivation and limitation of individual liberty, as well as to control all establishments and institutions necessary for the prevention of crime. The Tribunal para Menores as well as the Tribunal de Garantias Constitucionales y Sociales, were not yet functioning in 1946.

The constitution recognized municipal autonomy and respected the administration of the municipalities as established in the constitution of 1901. The municipalities might divide to form new ones or include themselves in others, always with the approval of both houses of congress. The mayor and his aldermen were to be elected directly by the people. The municipalities were divided into city and rural boroughs. Every municipality could establish its own charter after the election of a commission of 15 members to compile it.

The provincial government was made up of the muni-



	Cuba Stat	istical Data						
	193	8	1940					
ltem	Value (000's omitted)	Amount or Number	Value (000's omitted)	Amount or Number				
Exchange rate United States		1 Peso=		1 Peso≃ 91.5cents				
Great Britain		99.9cents		*				
Finance								
Government	\$77,575		\$75,670					
Revenues Government	\$77,575 (£15,867) \$81,284		\$75,670 (£19,757) \$79,238					
Expenditures	(£16,626)		(£20,689)					
National debt	(£16,626) \$132,954 (£27,195)		(£20,689) \$135,905 (£35,484)					
Transportation	(227,173)		(255,464)					
Transportation Railroads		9,449 mi. 2,200 mi.	t	9,501 mi.† 3,824 mi.‡				
Highways		2,200 mi.		3,824 mi.‡				
Communication		49,998		888188				
Telephones Telegraph Lines		9,026 mi.		3,545 mi ‡				
Radio Sets		125,000		68,483§ 3,545 mı‡ 250,000§				
Minerals		100000						
Manganese Ore Copper Concentrates		138,398 ton 55,922 ton 169,994 ton	S					
Iron Ore		169,994 ton	s					
Chrome Ore		44,272 ton	ıs					
Crops		2 222 745		3,084,371				
Sugar Cane (sugar)		3,332,765 tor		tone				
Tobacco		36,093		27,713				
Coffee		12,500	ns .	tons 63,382				
Colleg		to	ns	tons				
Livestock								
Cattle Swine		5,074,108	•	5,000,000 857,000				
Horses		587,463	•	857,000 391,000				
Forest Products	_							
Mahogany	1,	,452,412 cu.1	it.					
Sea Products Sponges		356 to	ns					
(exports only)		000 10						
Exports—Total	\$142,678 (£29,183) \$99,771 (£20,407)		\$433,095¶ (£107,335) \$237,204¶ ns (£58,787)	• • • •				
Sugar fram and	(£29,183) \$00,771	2,870,000	(£107,335) \$237,204¶	9,430,000¶				
Sugar (raw and refined)	(£20,407)	to	ns (£58,787)	tone				
Syrup and	\$11,552	1,280,000	559,343¶	327,000¶				
Molasses Unmanufactured	\$11,552 (£2,363) \$10,478	14,000	ns (£14,707) \$33.717¶	tons 16,000¶				
Tobacco	(£2,143)	to	\$59,343¶ ns (£14,707) \$33,717¶ ns (£8,356)	tons				
Imports—Total	\$106,007	• • • •	\$208.648¶	• • • •				
Cereals and	(£21,683) \$14,435 (£2,953) \$7,768		(£51,710) \$39,736¶ (£9,848)	376,000¶				
Flour	(£2,953)		(£9,848)	tons				
Cotton Manu- factures	\$7,768 (£1,589)	••••	\$15,336¶ (£3,801)	10,000¶ tons				
Vegetable Fibres	\$7,441		\$22,169¶	47,000¶				
and Manufactures	\$7,441 (£1,522)		(£5,494)	tons				
Defense		1424	7	1 424				
Standing Army Persor Reserves	inei	16,347		1,426 29,389				
Standing Navy Person	nel	2,799)	2,640				
Standing Air Force Personnel				266				
Reserves				12				
Military Expenditures	\$18,487 (£3,781)		\$15,921 (£4,157)					
Education	(25,7 01)		(204,137)					
Primary Schools		4,115 423,420	5	5,377 ♀				
Enrolment Secondary Schools			0	5,3779 502,7569 249				
Secondary Schools Enrolment				18,664♀				
Universities		•••		19				
Enrolment	1 6	••••		13,9479				
*Quoted in terms of the	u. o. exchange s owned by suc	ar companies	and 77 miles	owned by the				
mining industry.	II Ex	ports to U.S.	only					
‡1941. §1943.	¶19 ⊊19							
317 -0 .	¥ 17			-				

Cuba Statistical Dafa

cipalities of each province; it comprised a governor elected for four years and the council of mayors of the province. This replaced the system of provincial councils in effect since the beginning of the republic.

The constitution of the republic could not be changed without a request from more than 100,000 electors or by initiative of congress; but in either case it was necessary that congress approve the reform by a three-quarter majority vote, and that it be ratified by two-thirds of the total number of electors in each province.

Re-election of the president was prohibited and "he who has occupied the presidency of the Republic once cannot hold it again for eight years after having ceased to

be in office."

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Cucumbers

See VEGETABLES.

Cultural Anthropology

See ANTHROPOLOGY.

Cunningham, Sir Alan Gordon

Sir Alan Cunningham (1887-), British army officer and colonial official, was born May 1, 1887, a brother of Viscount Cunningham of Hyndhope (see below). A student of the Royal Military academy, Woolwich, he was commissioned in 1906 and served both in the field and as a general staff officer in World War I. In World War II, Sir Alan commanded British forces that conquered Italian Somaliland and liberated Addis Ababa in April 1941. Subsequently, he was appointed commander of the British 8th army and launched a surprise attack, Nov. 18, 1941, against Rommel's forces in Libya. The drive was quickly halted by the axis armies. Eight days later (Nov. 26), Sir Alan, who was reported suffering from overstrain, was granted sick leave and replaced by Maj. Gen. Neil Methuen Ritchie.

Returning to England, he was commandant of the Staff college at Camberley in 1942 and general officer in command of British forces in Northern Ireland, 1943–44. His appointment as British High Commissioner and commander in chief for Palestine and High Commissioner for Trans-Jordan, was announced Nov. 8, 1945. Soon confronted with terrorism, instigated by Palestinian Zionists in protest against Britain's restrictions on Jewish immigration, he decreed the death penalty for persons violating defense regulations.

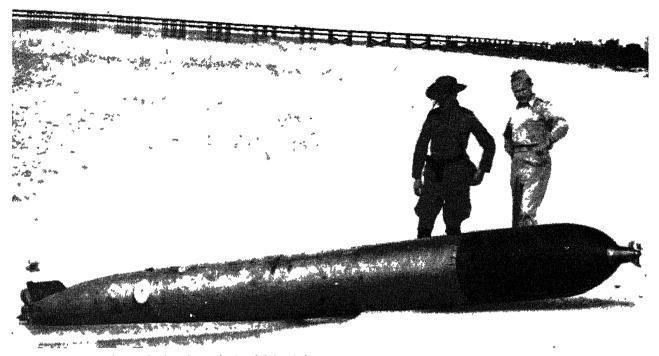
Cunningham of Hyndhope, Viscount

Viscount Cunningham (Andrew Browne Cunningham)), British naval officer, was born in Bishop's Waltham, Hampshire, England. He entered the Royal Navy at the age of 15, soon rising to the rank of a commissioned officer. Commander of a destroyer during World War I, he conducted daring raids against German shipping in the Mediterranean. A rear admiral from 1933 to 1936, he was appointed vice admiral in command of a battle cruiser squadron in 1937. He also was lord commissioner of the admiralty and deputy chief of the navy staff, 1938-39, and was named commander in chief of the Mediterranean fleet in 1939. In April 1940, Sir Andrew commanded the British naval squadron that entered Narvik fjord and sank seven German destroyers. Later, he returned to the Mediterranean, where he resumed command of the Mediterranean fleet (for a brief period during this time he headed a British naval delegation to Washington). The fleet under his command played an important part in the Allied victories in North Africa in 1942. He was promoted to the rank of admiral of the fleet, Jan. 1943. He succeeded Admiral Sir Dudley Pound as first sea lord and naval chief of staff in October.

He attended the Tehran and Yalta conferences, was made a baron in 1945 and a viscount, Jan. 1, 1946. He retired Feb. 28, 1946.

Curação

Curaçao is an island off the Venezuelan coast, near the mouth of Lake Maracaibo. The same name is applied to the six West Indian islands which form the Nether-



German torpedo on the beach of Aruba in the Dutch West Indies after it had missed its target during a nazi submarine attack on the harbour of this important petroleum centre Feb. 16, 1942. Shortly after the photograph was taken the torpedo exploded, killing four men

lands colony of Curaçao; that colony, along with Surinam or Dutch Guiana, constitutes the only new world possessions (officially called "overseas territories") of the Netherlands. The three islands in the Leeward group (sometimes referred to as the ABC islands), about 40 mi. north of the Venezuelan coast, include Curação (210 sq.mi.; est. pop. in 1944, 78,587), Bonaire (95 sq.mi.; pop., 1944 cst., 5,798); and Aruba (69 sq.mi.; pop., 1944 est., 39,318). The three small islands in the Windward group, about 500 mi. northeast, with their areas and 1944 estimates of population, include the southern part of St. Martin (17 sq.mi.; pop., 1,877; the remainder of St. Martin belongs to France); St. Eustatius (7 sq.mi.; pop., 1,092); and Saba (5 sq.mi.; pop., 1,194). The total population was thus 127,866. Total population as estimated in 1938 was 101,021 (including 62,798 on Curação and 28,155 on Aruba). The estimate of population in 1941 was 109,592 (Curação, 68,217; Aruba, 31,522; Bonaire, 5,556; St. Martin, 1,938; Saba, 1,213; St. Eustatius, 1,146). Negroes predominate in the population of all of the islands, accounting for 80% on Curação, 85% on Aruba, 90% on St. Eustatius, 95% on Bonaire and St. Martin, and 65% on Saba. Other principal components of the population were (1943 est.) 7,511 English, 5,156 Dutch and 4,213 Venezuelans; some 50 nationalities were said to be represented altogether. Many of the small shopkeepers were Poles, Rumanians, British West Indians and Syrians; Chinese operated restaurants, laundries and truck gardens, while many of the labourers were Portuguese. European Netherlanders usually were employed by the government and by the oil industry or other private concerns. The only important town is the colonial capital, Willemstad (pop. est. 1943, 33,062; 1938, 30,453; 1939, 31,264) on Santa Anna bay in Curação. Dutch is the official language, but many of the inhabitants speak a patois known as Papiamento, composed of Spanish, Dutch, English, Portuguese,

Carib, and native African words. Roman Catholicism is the dominant religion.

The territorial administration is headed by a governor, appointed by the crown and assisted by an appointive advisory council. A second council, the *Staten*, is composed of 15 members, of whom five are appointed by the governor and 10 elected, serving for four-year terms. Voters number only 5% of the population. The island of Curaçao is divided into three districts: Willemstad, Eastern Curaçao and Western Curaçao. The outlying islands are administered by underlying officials called *gezaghebbers*. Governors during the decade 1937–46: G. J. J. Wouters, until July 16, 1942; Dr. Pieter A. Kasteel, after that date.

GERMAN conquest of the Netherlands in May 1940 and the subsequent collapse of France seriously affected Curação, which previously had felt World War II relatively little. Canadian and French troops were landed in Curação and Aruba in the summer of 1940 to protect the colony's oil-refining industry, refineries on those two islands (operated by Royal Dutch Shell and Standard Oil of New Jersey and their subsidiaries) being considered among the largest in the world. The French troops were later withdrawn, but other United Nations forces continued to occupy the key islands throughout the war. Output of the refineries was considerably curtailed under wartime conditions, with adverse effects upon employment and other business. The colony benefited, however, from the transfer of the Royal Dutch Shell company's home office to Willemstad and from the arrival of numerous refugees who took up residence. The islands maintained unquestioned loyalty to the Netherlands government-inexile. Proposals made at the Second Foreign Ministers' conference at Havana, Cuba, in July 1940 that a scheme of "provisional administration" be planned for the American possessions of European powers in the event that nazi Germany should attempt to establish control over them met with sharp disapproval in Curação so far as the

possible application of the plan to that colony was concerned.

Curação continued to be dominated throughout 1941 by wartime activity, and the increasing demand for its products led to expansion of the already extensive refining facilities. Building construction was especially active; one of the more notable projects was a 600-ft. ship drydock. Defenses, including air-raid shelters, were steadily extended as handling of petroleum for war needs made Willemstad one of the busiest war ports in the world. Curação and Aruba were both subjected to direct axis attacks early in 1942; even more stringent defense precautions were maintained thereafter. The entire colony increasingly felt the pinch of the shipping shortage as a result of submarine warfare in the Caribbean and of diversion of ships to other war needs. Shipping shortages continued in 1943, and the colony hence suffered a scarcity of some items, especially of consumer goods. A 50% increase in price levels occurred during the year. Maximum prices were set on essentials early in the year, and the government issued food cards in March 1943 in anticipation of later food rationing. Because of the rise in living costs, government and refinery employees were given a 30% wage increase on Aug. 31, retroactive to July 1, 1943. The petroleum refining industry continued to expand its facilities. Demand for labour in that industry (with considerably higher wages paid) resulted in the premature ending of the harvesting of aloes in Sept. 1943, with only three-fourths of the crop gathered. Phosphate mining also came to a standstill, chiefly because supplies on hand had been built up to a sufficient size to meet demands for some time to come. Venezuelan military observers went to Curação in March, under agreement with the colonial government. Direct radio-telephone communication with the United States began operation for the first time on Dec. 20, 1943.

Pronouncements made by Netherlands officials in May 1944 indicated that the empire would be reorganized following the war to provide for a considerable degree of decentralization and local self-government. Inhabitants of Curação thereupon looked forward to a greater amount of autonomy, although details as to how the plan would be worked out were not then announced. Princess Juliana of the Netherlands visited Curação and Aruba late in February and early March 1944. Officials of Curação continued their close co-operation with the war effort; 1944 was marked especially by closer relations with officials of the United States and Venezuela. Gov. Pieter Kasteel on April 3, 1945, received U.S. Senators James M. Mead, James M. Tunnell and Homer Ferguson, present in the West Indies on an inspection trip. Commodore L. W. Busbey, Jr., succeeded Rear Adm. Frank E. Beatty as commander of the Allied naval forces, stationed in Curação on May 16. Curação's interest in the possibility of a greater degree of autonomy revived at the end of the war. Economic conditions, insofar as they were affected by shipping, gradually improved in 1945. One of the Aruba refineries, the world's largest, completed in 1945 the processing of the 1,000,000,000th barrel of oil since its opening in Jan. 1929. The Aruba refineries began experiments with hydroponics in order to reduce the need for imported foodstuffs.

Dutch officials representing the territory of Curaçao participated with British, U.S., and French officials representing the respective Caribbean colonies of those powers in a conference in the Virgin Islands (of the United States) beginning Feb. 21, 1946. The conference dealt

with common problems affecting the territories and colonies in Middle America, including those of financial assistance for agriculture, industry and trade, employment and living standards, the extension of a minimum wagerate system, enforcement of employment standards and others. A Caribbean customs union was tentatively proposed, but the plan did not meet with approval. The former Anglo-American Caribbean commission, organized by joint agreement between Great Britain and the United States on March 9, 1942, was broadened in 1945 to include representatives and colonial interests of the Netherlands and France.

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Curação: Statistical Data							
	-	1938	1944				
_ ltem	Value (000's omitted)	Amount or Number	Amount or Number				
Exchange rate United States		1 guilder=55 cents	1 guilder=38 cents				
Great Britain	• •	7.50 to 7.60 guilders =£1	10.69 guilders =£1				
Finance Government revenue Government expend	(£1,210)						
tures	. (£1,107)						
Transportation Highways Airways			1,86 mi. 1,812 "				
Communication Telephones		1,157	1,824				
Radio sets	 	1,137	8,144				
Minerals Phosphate of lime	\$481*† (£98)	•••	·				
Livestock	(2070)						
Goats	• •	68,000 43,000	61,929‡				
Poultry	• • • •	32,600	49,000‡ 25,819‡				
Manufactures		•	20,0.74				
Petroleum	\$135,203 £27,655						
Exports Total	\$158,591	*					
Petroleum and prod	(£32,438)		7				
Food and beverage		*	•				
Imports	(£16) \$163,641						
	. (£33,471) ucts \$139,910))*					
Food and beverage	£28,617) \$3,88: £795	Ś*					
Education	(27,70	•					
Schools Enrolment	::	49 11,044					
*1937. †E	cports only.	‡1943.					

Curling

Once again Canada held close to its two and one-half to one ratio in the annual pursuit of the Gordon International medal, leading trophy of curling. The United States won only two of the yearly bonspiels after 1937, capturing the event in 1939 and 1946. Interest in curling increased considerably during the decade 1937–46, although World War II hindered competition from 1942 to 1945.

Of the various curling trophies contested each year, the Munson shield ended one of the longest stays in one place when the Royal Montreal (Canada) team won it in 1940. Previously Utica, N.Y., regarded as the mecca of U.S. curling, had held the Munson shield for eight years. The Utica Curling club salvaged the Mitchell medal in 1940, while the Saranac Lake Curling club won the Patterson medal and Schenectady, N.Y., won the Douglas medal.

The Schenectady Curling club won both the Gordon Grand National and Richard S. Emmet medals in 1941, while Ardsley, N.Y., won the Allen medal. Schenectady

captured its fourth straight Gordon Grand National medal in 1942, marking the sixth time Bevis P. Coulson skipped a rink to the Gordon title. The New York Caledonians won the Richard S. Emmet and Fred Allen Memorial medals.

Skipped by novelist Ben Ames Williams, the Country club of Brookline, Mass., annexed both the Mitchell and Allen medals in 1943. It marked the first time in 12 years that a rink had won both medals. In 1944, the Schenectady Curling club duplicated Brookline's double conquest in the Mitchell and Allen competition, and added the Gordon medal for a three-way sweep. Ardsley captured most of what was left in the way of U.S. laurels, winning both the Emmet and Douglas medals.

Once again the Mitchell and Allen medals went to the same team in 1945, Utica accomplishing the sweep with victories over Ardsley in both finals. Utica also won the Emmet medal, but lost the Gordon medal final to the New York Caledonians. The Toronto Granites won the Douglas medal.

The Caledonians repeated as Gordon medal winner in 1946, while Utica scored another double by taking the Griffith and Emmet medal competition. Brookline won the Douglas medal.

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Currency

See Coinage; Exchange Control and Exchange Rates; International Bank for Reconstruction and Development; International Monetary Fund. See also under various countries.

Currie, Lauchlin

Currie (1902-), U.S. economist and government official, was born Oct. 8, 1902, in West Dublin, Nova Scotia, becoming a naturalized U.S. citizen in 1934. A graduate of the London School of Economics, 1925, he received his Ph.D. degree from Harvard in 1931. He joined the Harvard faculty, serving as instructor from 1927 to 1934. Subsequently, he was professor of international economics at the Fletcher Graduate School of Law and Diplomacy at West Medford, Mass., 1933-34. In 1934 he became senior analyst for the U.S. treasury and later was associated with the Federal Reserve board. Appointed in 1939 as administrative assistant and counsel on economic affairs to Pres. Roosevelt, Currie made two trips to China, one in 1941 to study Chungking's lend-lease needs and another in July 1942 for consultations with Generalissimo Chiang Kai-shek on speeding U.S. war supplies to China's armies. Currie was appointed as one of the deputy administrators to the Foreign Economic Administration on Oct. 26, 1943. In Jan. 1945 Currie went to Switzerland to negotiate a new trade agreement with the Berne government designed to cut down Swiss trade and transit movements to the reich. Currie, who returned to Washington on Mar. 19, 1945, reported that he considered the mission "obtained complete success in all our objectives."

With the abolition of the FEA in Sept. 1945, he left the government service.

In early 1946 Currie, who had become president of the American Council for Italian-American affairs, made an inspection tour of Italy to study the progress of reconstruction for the council.

CWAC (Canadian Women's Army Corps)

See Canadian Women's Services, World War II.

Cycling

Cycling, an international sport, produced an abundance of activity despite the restrictions placed upon it during the years of World War II.

With 1,130,736 bicycles manufactured in the United States alone in 1937, the revival of the sport, which had risen to heights at the turn of the century and then receded in popularity, was on a grand scale. Foreign riders, in particular, captured the public eye in 1937. The 31st Tour de France race was won by Roger Lapeble of France, who covered the 2,775-mi. circle around that country in 26 days. Italy's entrants were second and Germany's third. In England, the team of Piet van Kempen of the Netherlands and Henri Buysse of Belgium won London's six-day race. The Isle of Man bicycle race was captured by J. Fancourt, who covered two laps of the difficult course in 3:28:43.6 for an average speed of nearly 22 mi. an hour.

Only two champions were able to retain their titles during 1938. Jan van der Vyver of the Netherlands kept his crown as the amateur sprint champion of the world, and Mickey Francoise of Montclair, N.J., for the third time in succession prevailed over the amateur sprinters of the U.S. The sensation of the year in the sport was the unexpected downfall of Josef Scherens of Belgium as the world professional sprint champion. Arie Van Vliet of the Netherlands succeeded him. Van Vliet thus brought to an end one of the greatest streaks in the annals of the sport. Scherens, previous to 1938, had won the professional sprint title six years in a row.

The professional motor-paced championship of the world was won by Eric Metz of Germany, who succeeded his compatriot, Walter Lohman, 1937 crown-wearer. To Marcel Kent of Belgium went the world professional road title, and to H. Knecht of Switzerland went the world amateur road laurels. Albert Sellinger of Newark, N.J., became the U.S. national professional sprint champion, dethroning Mathias Engel of Germany. The National professional motor-paced crown was won by Tino Reboli, also of Newark, who dislodged the Belgian veteran, Gerard Debaets. The great German team of Gustav Kilian and Heinz Vopel continued to dominate six-day competition. The Belgian pair of A. Buysse and A. Billiet won the Wembley six-day bike race in London. They covered 1,950 mi. and four laps and gained 1,348 points.

Arie Van Vliet of the Netherlands was the only world champion to retain his title in cycling during 1939. He kept his world professional sprint championship by default after he and Josef Scherens of Belgium had reached the final of the competition at Milan, Italy. In the heat to decide the championship, Scherens was injured and thus the title stayed with Van Vliet automatically.

This was the year which saw war subsequently reduce cycling to a mere record sheet. War activities compelled the abandonment of many cycling events, among them those designed to produce the professional motor-paced and professional road champions. Thus the above-mentioned sprint crown was the only world professional championship held during 1939. The world amateur sprint honours went to Jan Derkens of the Netherlands, who succeeded his countryman, Jan van der Vyver. George Shipment of Brooklyn took the national professional sprint crown, and Tino Reboli, Newark, retained the national professional motor-paced championship. The national amateur sprint laurels were won by Howard Rupprecht of Maplewood, N.J. Robert Stauffacher of San Francisco

took the national A.A.U. senior crown, and Eddie Carfagnino became the National Cycling association senior champion.

In 1940 the U.S. still clung to a few events in the sport, principally the six-day classic. At Buffalo, Heinz Vopel of Germany and Cecil Yates of Chicago won the six-day international bicycle race, amassing a total of 170 points after 2,025 mi. of riding. When a similar event was held in Columbus, O., Gustav Kilian and Henry O'Brien were the top pair of riders. Vopel also paired with Cesare Moretti to win the 18-mi. international motor-paced race in 40 min. and 20 sec. The National Olympic bicycle racing championship was captured by Ed Carfagnino.

With virtually all important cycling events cancelled for the duration of World War II and most leading riders engaged in the armed services of their respective countries, the American Bicycling league selected, in 1941, an All-American standing as follows:

Name	City	Points
George Hurlburt, Jr.	Buffalo	275
Furman Kugler	Somerville, N.J.	195
Jerry Kandler	Milwaukee	190
Iggy Gronkowski, Jr.	Buffalo	115
George Wolf	San Francisco	98 85 84
Johnny Weber	Milwaukee	85
James Dolle	Irvington, Ind.	84
Isamer Fiyuyama	Honolulu	79
George Edge	Philadelphia	
Harry Naismyth	Somerville, N.J.	74 67 65 64
Bruce Burgess	Irvington, Ind.	65
Francis M. Cabe	Honolulu	64

A summary of the 1941 records, which stood throughout the war, follows:

The N.C.A. sprint championship was won by Tom Saetta of Brooklyn, while Mike DeFilipo of Newark won the paced title. The A.B.L. senior road championship was won by Marvin Thompson of Chicago, and the junior title went to Andrew Bernadsky of San Francisco. The girls' champion was Jean Michels of Chicago.

The track championships of the A.B.L. were won by Bob Stauffacher of San Francisco, who triumphed in the senior class, and Chuck Edwards of Chicago, winner among the juniors. Stauffacher also captured the Century Road club's senior title.

The only international event that year was a race over the Inter-American highway from Tegucigalpa, Honduras, to Guatemala City. A Guatemala team won, with Fraterno Vila the individual star.

In 1943, although recognized competition was still absent from the world sports scene, an encouraging announcement came from Cy Panitch, president of the Bicycle Club of America, who asserted that membership had risen 25% in one year. Furman Kugler, second ranking rider in the U.S., won the New Jersey state cycling championship, in one of the rare title events, with a total of 16 points, having finished first in the 5-mi. and 10-mi. races sponsored by the Amateur Bicycle league of America.

Following V-J day, announcements came quickly of the restoration of the leading cycling events. Announcements of return to activity were made known by the American Bicycling league, the National Cycling association and other ruling organizations in the sport throughout the United States, Great Britain and Canada. (T. J. D.)

Cyclotron

See Atomic Bomb; Chemistry; Medicine; Physics.

C.Y.O. (Catholic Youth Organization)

See CATHOLIC ORGANIZATIONS FOR YOUTH.

Cyprus

The island of Cyprus is situated in the easternmost basin of the Mediterranean, with Asia Minor to the north and Syria to the east, at distances of 60 and 41 mi. respectively. Area: 3,572 sq.mi.; pop. (1931 census) 376,529; (est. 1943) 395,124. Chief towns: Nicosia (cap. 23,507); Larnaca (11,715); Limassol (15,066); Famagusta (8,771). Languages: Greek and Turkish, the Greek-speaking element comprising about 80% of the total population. Religion: Mohammedan as to some 16% of the population, the remainder being, for the most part, Christians of the autocephalous Church of Cyprus, a branch of the Orthodox Eastern Church. Governors (with dates of assumption of office): Sir Richmond Palmer (Dec. 21, 1933); Sir William Battershill (Aug. 10, 1939); Sir Charles Woolley (Nov. 25, 1941); Lord Winster (Oct. 5, 1946).

* * *

Cyprus, like Malta (q.v.) had passed through a period of some difficulty during the years that preceded the decade 1937-46. Serious disturbances had occurred in the island in 1931. They arose out of what was known as the "Enosis" movement, which was based on a demand put forward by the Greek-speaking inhabitants for union with the kingdom of Greece. The disturbances made it necessary to assert British authority in a manner that would prevent further outbreaks. The legislative council was abolished at the end of the year and power to legislate was vested in the governor alone. These conditions still prevailed when World War II broke out in Sept. 1939 and remained unchanged, so far as the central government was concerned, until the end of the decade, though steps were taken during the war to restore some measure of local selfgovernment in municipal and rural districts. It was announced in the British parliament in Oct. 1946 that a consultative assembly was to be called together in Cyprus to consider the framing of proposals for constitutional reform, including the re-establishment of a central legisla-

There were military developments in the colony even before World War II. Proposals for raising a regular infantry battalion in Cyprus were not proceeded with, but the question of forming Cypriot units of the royal engineers, royal army service corps, and other services were under active examination in the early part of 1939. On the outbreak of the war some 500 Cypriots were at once enlisted in R.A.S.C. mule transport companies. These 500 men arrived in France in Jan. 1940 and were actually the first British colonial troops to take the field against the Germans. Subsequently, Cypriot transport units saw service in the middle east, in Greece and in Italy, where five pack transport companies served with distinction at Cassino in May 1944.

Cyprus remained immune from axis attack (apart from a limited number of air raids) throughout the war, but it was in the danger zone for some two and a half years after the spread of hostilities to the Mediterranean, and active preparations had to be made for its defense. British troops in considerable numbers were stationed in the island throughout this period. When Cyprus was first assigned to Great Britain in 1878 it was described by a British minister of the day as "a place of arms in the Levant, where our ships can lie in bad weather and troops and stores can be held ready for action." That was, in fact, very much the role that the island discharged during World War II.

Following a visit paid to the colony by Sir Ralph Oakden in 1935, various irrigation projects were planned and brought into operation. In 1936 a grant of £30,000 was made from the Colonial Development fund for an intensive exploration of underground water resources. The investigation started in the following year. During the war Cyprus derived substantial benefit under the Colonial Development and Welfare Act of 1940. A grant of £200,000 was made in 1941 for afforestation and forest road construction. In 1943 further grants were made, amounting in all to about the same sum, for the promotion of irrigation schemes. Additional grants for local irrigation projects, involving a total expenditure of £248,250, were approved under the act during the year 1944–45. The forest produce of Cyprus made a substantial contribution to military requirements during the war.

Labour trouble manifested itself in Cyprus at different periods throughout the decade. A number of strikes occurred during the early part of the war, and a somewhat critical situation arose in 1940 when a strike of the mechanics and electricians in the public works department led to the threat of a general stoppage of work if the strikers' demands were not met. Matters were adjusted, and no general strike in fact took place. Further stoppages, following for the most part upon the demand for increased wages to meet rising costs of living, took place in 1943 and 1944. A strike at a local factory in Limassol in April 1944 was accompanied by bomb outrages in the town, but there were no casualties. In the following month a local commission of inquiry made a number of recommendations for the improvement of conditions of employment, both for skilled and for unskilled workers. The trade union movement made great progress in the island during the war years; it received every official encouragement.

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Cyprus: Statistical Data 1938 1944						
		1938		4		
ltem	Value (000's omitted)	Amount or Number	Value (000's omitted)	Amount or Number		
Exchange rate	•	£1 = \$4.889		£1 = \$4.035		
Government revenues			£2,825 (\$11,410) £3,513 (\$14,174)			
Government expenditures	. £697 (\$4,363)		23,313 (414,174)			
Railroads		71 mi. 669 mi.		71 mi. 864 mi.		
Highways (improved)	•					
Copper ore (concentrates)		161,542 tons 568.018		9,827 tons 12,424 ,,		
Pyrite ore (copper bearing)	•	• • • • • • • • • • • • • • • • • • • •				
Raisins and grapes		78,820 ,, 60,419 ,,		49,075 ., 33,350 .,		
Barley		50,250 ",		27,803 "		
Livestock						
Sheep		283,152 171,712		330,871* 224,054*		
Exports—total			£2,346 (\$9,467)			
Cupreous concentrates	. £768 (\$3,756)	164,000 tons	£67 (\$269)	10,000 tons		
Cupreous pyrites	. £489 (\$2,389) . £274 (\$1,341)	577,000 ,, 66,000 ,,	£292 (\$1,177)	51,000 tons		
Imports—total	. £2,267 (\$11,085)		£4,830 (\$19,484)	• • •		
Wheat flour	. £163 (\$797)	19,000 tons	£361 (\$1,458)	15,000 tons		
Cotton cloth	. £131 (\$641)	6,973,000 yd. 1,192,000 cu. ft.	£346 (\$1,395) † (\$2)	4,190,000 yd. 683 cu.ft.		
Timber	. 2.17 (4572)	.,., 2,000 00. 11.	1 (4~)	2 20 00111		

Czechoslovakia

†£495.

*1945.

An independent republic in central Europe, Czechoslovakia was established in 1918, dismembered in 1938–39 by Germany and restored in 1945 to its pre-Munich frontiers with the exception of Subcarpathian Ruthenia, ceded to the U.S.S.R. (Moscow treaty, June 29, 1945). Area (before the dismemberment): 54,236 sq.mi.; (after restoration): 49,321 sq.mi.; pop. (census Dec. 1, 1930): 14,729,536; (est. Dec. 1, 1937): 15,167,800; (est. Dec 30, 1946): 12,003,000, the decline in population being explained mainly by the departure of the Germans and the cession of Subcarpa-

thian Ruthenia (pop. 1938 est. c. 725,000, of whom 65% Ruthenians, mainly Greek Catholics). Chief towns (first figure 1930 census, second figure June 30, 1946, est.): Prague or Praha (cap., 848,823; 923,946); Brno (264,925; 268,873); Moravská Ostrava (125,347; 175,639); Bratislava (123,852; 138,966); Plzen (114,704; 122,753). According to the 1930 census the population of Czechoslovakia comprised the following nationalities: Czechs and Slovaks (66.2%); Germans (22.5%); Hungarians (4.9%); Ruthenians (3.9%); Jews (1.4%); Poles (0.7%); others (0.4%). President: Dr. Eduard Beneš, elected on Dec. 18, 1935, after the resignation of Thomas G. Masaryk, resigned on Oct. 5, 1938, and left the country; Dr. Emil Hácha was elected president on Nov. 30, 1938, and retained his post after the creation by Germany of the protectorate of Bohemia-Moravia; his tenure of office ended when an anti-German rising broke out in Prague on May 5, 1945 (he died on June 27, 1945, while awaiting trial). On May 19, 1939, in Chicago, Dr. Beneš assumed the leadership of the Czechoslovak National committee recognized by France on Nov. 17, 1939, and by Great Britain on Dec. 20, 1939, as "qualified to represent the Czecho-Slovak peoples"; on July 21, 1940, Great Britain recognized the national committee as the provisional Czechoslovak government and Dr. Beneš reassumed the function of president of the Czechoslovak republic; on July 18, 1941, he was fully recognized in this capacity by Great Britain and the U.S.S.R. and on July 30, 1941, by the U.S.; since he had been elected in 1935 for seven years, on Dec. 4, 1942, the Czechoslovak government in London declared Dr. Benes' office prolonged until a new president should be elected by a national assembly in Prague. Returned to the capital on May 16, 1945, Dr. Benes was confirmed in office by the provisional national assembly on Oct. 28, 1945, and unanimously re-elected for

seven years by the constituent assembly on June 19, 1946. Prime ministers: Dr. Milan Hodza (Nov. 5, 1935–Sept. 22, 1938); Gen. Jan Syrovy (Sept. 22, 1938–Dec. 1, 1938); Rudolf Beran (Dec. 1, 1938–March 18, 1939).

By the Munich agreement of Sept. 29, 1938, Czechoslovakia was forced to cede to Germany an area of 11,071 sq.mi. with c. 3,653,300 inhabitants; on Oct. 1, 1938, by a direct agreement with Poland, Czechoslovakia ceded to the former a part of Cieszyn or Teschen Silesia (349 sq.mi., 227,000 inhabitants, including, according to Pol-

ish statistics, 156,600 Poles); by the Vienna award on Nov. 2, 1938, Germany and Italy forced Czechoslovakia (or rather Slovakia and Subcarpathian Ruthenia) to cede to Hungary an area of 4,566 sq.mi. with a population of c. 1,027,500. After these territorial changes Czechoslovakia had 38,258 sq.mi. and 10,260,000 inhabitants, of whom 6,750,000 were Czechs, 2,200,000 Slovaks, 640,000 Ruthenians, 470,000 Germans and 200,000 Hungarians. Under German pressure the remaining Czecho-Slovakia (spelled with a hyphen) took the form of a federal republic with an autonomous Slovak government in Bratislava (prime minister: Father Josef Tiso, appointed by the Prague government on Oct. 6,

1938) and an autonomous Ruthenian government in Chust (prime minister: Father Augustin Vološyn, appointed by the Prague government on Oct. 9, 1938). On March 15, 1939, however, the German army occupied Prague and the following day Germany created the protectorate of Bohemia-Moravia; Slovakia and Subcarpathian Ruthenia (now Carpatho-Ukraine) proclaimed on March 14 their independence. The latter existed only one day because Germany authorized its occupation and annexation by Hungary.

On March 18, 1939, Chancellor Adolf Hitler appointed Baron Konstantin von Neurath reich protector of Bohemia-Moravia; Dr. Hácha remained president, but Beran resigned as prime minister and was replaced by Gen. Alois Eliás. Arriving in Prague on Sept. 27, 1941, as deputy reich protector, Reinhard Heydrich arrested General Eliás (who was executed in June 1942) and on Jan. 19, 1942, appointed instead Jaroslav Krejci. Shot on May 27, 1942, by three Czech parachutists sent from London, Heydrich was succeeded by Kurt Daluege; Neurath, still nominally reich protector, was replaced on Aug. 20, 1943, by Wilhelm Frick. In Jan. 1945 Krej i resigned and was replaced by Rudolf Bienert. (See also SLOVAKIA.)

Shadow of the Reich.-By 1937 when Czechoslovakia lost her first president (who had already been succeeded in office by Dr. Beneš in 1935), the German danger for the republic had increased. It was the year in which Hitler's Germany had already completed its total breakaway from the policy of international co-operation. It was the year in which the aggressiveness of the separatist movement rose. Abroad, Konrad Henlein, leader of the pro-nazi Sudeten-Germans, leader of a minority working hard to secure justice within the framework of the republic, but at home, in company with Karl Hermann Frank, he initiated a radical campaign, declared the life of the German minority tantamount to "Babylonian captivity," and, coining the catch phrase of "self-determination for the German population in the Republic," declared war on the policy of the activist German parties and that of the Czechoslovak gov-

The close link between Henlein's aggressiveness and the policy of the German reich was publicly proclaimed in the first months of 1938. In his capacity as chancellor of the German reich, Hitler stood up in the reichstag on Feb. 20 and made known that "he would not tolerate the oppression of 10,000,000 Germans in two neighbouring States." First on his program was Austria. Events after that developed rapidly in Czechoslovakia. Henlein's party, strengthened by the joining up of German farmers and tradesmen, met only a month after the fall of Austria in Karlovy Vary, where it proclaimed the demands of the "Sudeten" Germans, which meant the breaking up of the Czech lands and the subordination of Czechoslovak policy to Germany's commands. There were few among the Czechoslovaks who did not know the aims of Henlein's policy and who was behind Henlein.

The months up to the autumn of 1938 were taken up with negotiations between the Czechoslovak government and the Henlein party, whose ever-rising demands proved the lack of good will for an agreement with the Czechoslovak majority. The mission of Lord Walter Runciman, whom the Czechoslovak government received in August so as to give proof of the magnanimity of its policy toward the minorities, could gain only the conviction of this lack of good will on the part of the Germans. It was a matter for regret that the mission did not know how to form the right conclusions on the basis of that conviction.

Tragedy of Munich.—After the British prime minister, Neville Chamberlain, had gone to Berchtesgaden and Godesberg for consultations with Hitler, on Sept. 29, the prime ministers of France and Great Britain met with Mussolini and Hitler at Munich and arrived at the agreement whereby they dictated to Czechoslovakia that it must give up an extensive border territory, the Sudetenland, to Germany and whereby, indeed, the entire Czechoslovak nation was being handed over to Hitler's naziism. The cession of half the Czech part of the Teschen area to Poland and of the frontier regions of Slovakia with Subcarpathian Ruthenia to the Magyars was a further chapter in that tragedy.

The second Czechoslovak republic, created by the Munich agreement of four powers, was no longer an independent and sovereign state. It was a sham state at the mercy of Germany, which took over all the former fortifications of the republic and its splendid armaments, secured all the railways, ordered the building of strategic highways and forced the new government, men picked to Hitler's liking, to grant to the rest of the Germans inside the Czech lands a privileged status.

The Czech nation, which accepted the second republic only with the bitterest of feelings, did not hide its opposition to the Germanophile regime. Despite this fact, the allegation that the rest of the German population were an object for oppresssion and maltreatment by the Czechs within the second republic, and that this was the justification for German armies to invade the Czech lands and occupy them, was a lie to further Hitler's policy. He made play of the disintegration of the republic, for events in Slovakia clearly developed under the influence and pressure of the reich's nazi policy, which put to its own use the anti-republic feeling of a number of autonomistic desperadoes in order to bring about the secession of Slovakia and to place it as an "independent" state under Hitler's protection. The events of March 15, 1939, together with the whole Berlin comedy which saw the wretched representative of the second republic suing for Hitler's protection, was simply the culmination of a development which began at Munich. The mutilated republic, whose frontiers were never guaranteed despite the promises of the powers at Munich, could not maintain itself by its own strength and fell into Hitler's lap at the moment he thought the situation ripe for further aggressive moves on the European chessboard.

The "Protectorate."-Instead of a second Czechoslovak republic there was then, in the heart of Europe, the protectorate of Bohemia and Moravia, set up by the Hitler decree of March 16, 1939. The protectorate was "autonomous" but had at its head a chief who was allowed to perform his duties only if he enjoyed the confidence of the fuehrer; it had a government approved by the reich protector. Its sovereignty could be claimed only "in accord with the political, economic and military interests of the Reich"; its foreign interests were looked after by that reich itself; it was subject to the customs sovereignty of the reich; the reichsmark was the legal tender; the military power of the reich and its secret police were installed and the administration of any one of its sectors could at any time be taken over by the reich authorities represented by the office of the reich protector-such was the framework of the new order of things in the historic lands of Bohemia.

After March 16, 1939, the Czechoslovak nation ceased to live politically. President Emil Hácha, who had the confidence of the fuehrer, tried to replace the remnants of the political parties still vegetating in the second republic by a "National Solidarity" (Národní sourucenství), but that

was merely a fragile façade composed of men amenable to German wishes, appointed to leading posts in that institution for duties to be performed only as directed by the reich and only for as long as it suited the Germans. There was of course no parliament, no regional authority; communal administrations had German members and commissioners foisted on them by nomination; the press was regimented and subordinated to Wolfram von Wolmar, the nazi press chief; the public offices were gradually Germanized; economic life was reorganized on German lines and adapted to German needs and social institutions were placed under German direction and control, in the same way as labour organizations. The anti-Jewish measures of the reich were likewise forced on Czech life. The gestapo censorship and the German press board were active. Schools were reorganized on the German system, and youth education was entrusted to German servants of the Kuratorium. The German greeting was obligatory in public life and at the offices, the swastika flag fluttered from public buildings and private houses on every conceivable occasion; several dozens of nazi "game beaters" headed by Emanuel Moravec, minister in the protectorate government, did all they could to drum and drill into the Czech people feelings of fealty to the German reich, and to make of the Czech lands a model province of the reich and a suitable ground from which could be launched further onslaughts of nazism on the eastern and southeastern areas of Europe.

The Czechoslovak nation, which accepted the second republic with the greatest self-abnegation in the autumn of 1938, could never be reconciled with the dispensation of March 1939. The relentless and self-sacrificing struggle which filled six whole years of the modern history of the Czechoslovak nation developed on two fronts; each demanded its own methods but they were from the start in lively moral and political contact and accord.

The first of these two fronts was the home front. Its army was the whole Czechoslovak nation which had to live under the German nazi yoke, physically shut off from the world outside and exposed to all the means of nazi terrorist rule. The beginning of the resistance struggle within the country may be traced to the last few months of the preprotectorate era when the necessity was realized for helping the Czech people, and particularly officers and soldiers, to escape across the frontiers so that they could become a nucleus of a future Czechoslovak army abroad. The stream of these voluntary Czechoslovak exiles, organized by soldiers, grew stronger after the nazi occupation of the Czech lands, reached maximum strength in the autumn weeks after the outbreak of World War II in Sept. 1939 and could not be dammed even when the war with Poland was successfully concluded by Germany. To the nation that stayed behind at home and that during the first few months of the occupation was already subjected to the rigours of the gestapo regime, there remained few means of resistance. It started forming itself into secret groups, family circles and close conclaves but never stayed dormant. It used means of every description, including an illegal press, to keep the national spirit from flagging: only three months after the occupation, it brought out the first issue of V Boj (Into Battle). There were no bans strong enough to prevent Czech people from getting in touch with their friends abroad. Czechs did not lose heart even after the rapid successes of the Germans in the first phase of World War II. They gave expression to their anti-German feelings on the Czechoslovak Day of Independence, Oct. 28, 1939, by demonstrating in the streets of Prague, which, on that day, were to be sprinkled with Czech blood for the

first time. Not long after this, on the occasion of the funeral of Jan Opletal, a medical student who had been wounded on Independence day, the students staged an anti-German street demonstration which supplied the occupying force with its reason for severe reprisals. These included the closing down of all Czech universities on Nov. 17, 1939, the execution of 9 student functionaries of student clubs, the placing of 1,500 students in German concentration camps and the proclamation of martial law in Prague, Beroun, Hořovice and Kladno. On Dec. 12 it dissolved the Prague municipal authority, arresting in the middle of the following year the former mayor of Prague, Dr. Otokar Klapka; on Aug. 6, 1940, it suppressed the National Solidarity in the Prague district and at the beginning of November it dissolved all Boy Scout organizations. In the spring of 1941 it sealed down all the Sokol gymnastic centres. None of these measures, however, could change the determination of the Czech men and women or stop the work of the resistance movement at home. That is why the occupying power decided in the autumn of 1941 on a more drastic step. On Sept. 27, 1941, Hitler sent to Prague Heinrich Himmler's lieutenant, Reinhard Heydrich, Gestapo chief, who assumed the function of deputy reich protector. He introduced himself by ordering the arrest and execution of the prime minister of the protectorate government, Gen. Alois Eliás, the shooting of Dr. Klapka and, with him, of scores of Czech patriots-generals, Sokol leaders, intellectuals, clerks and intrepid leaders of the Czech resistance movement from all the strata of the nation. With the ever-rising reign of terror, which claimed for its victims on Oct. 1, 1941, the entire Sokol community that had been by then totally disbanded as an organization, there went hand in hand greater efforts than ever to win the Czech people for the German cause. Thus, Heydrich and Frank on Jan 19, 1942, carried out a reshuffle of the protectorate government by making Jaroslav Krejči its head and Moravec its minister of education and culture. Walter Bertsch, a German, was placed in charge of the compulsory enrolment of Czechs for work in the reich, holding an official position in the protectorate ministry of labour and social protection.

On May 27, 1942, an attempt was made on Heydrich's life, causing his death on June 4. Kurt Daluege, his successor, and Frank replied to the assassination by staging terrible reprisals. On June 10 they ordered Lidice, a Czech mining village, to be razed, meting out the same fate to a small hamlet, Ležáky, on June 24. Between these two dates and for a long time afterwards there was not a day on which nazi execution squads did not kill dozens of the nation's best people.

By the latter part of 1943, the situation at the fronts had begun to change. The occupying power in the protectorate, represented from August 20, 1943, by the new protector, Wilhelm Frick, and Karl Frank, newly created minister of state, needed Czech workers for the reich and proclaimed a total labour mobilization. The response was sabotage and the forming of partisan bands which began to gather in the Bezkydy hills country and the wooded districts of Bohemia. Attempts to frighten the Czechs with the "Bolshevik bogey" met with no success.

At the beginning of April 1944 it was reported that soviet armies, including Czechoslovak army units, had reached the frontier of Subcarpathian Ruthenia. The time had at last come for the Czechoslovak resistance forces, till then working underground, to come out into the ópen and join forces with the resistance movement abroad.

Czechoslovak Government Abroad.-Czechoslovak resistance abroad, meanwhile, had passed through similar ascending stages of development after the spring of 1939. Its first public manifestation was a protest sent to President Roosevelt by the president of the first republic, Dr. Benes, who was at that time a professor lecturing at the University of Chicago, immediately after the German entry into the Czech lands, declaring that the Czechs and the Slovaks would never accept the unbearable suppression of their sacred rights, and that they would never cease fighting for them, appealing to the government of the United States to withhold its recognition from the occupation. That protest, which was also sent to the heads of the British and French governments, to the commissar for foreign affairs, Maxim Maximovitch Litvinov, and the council of the League of Nations, proved an incentive for a rising of Czechoslovak people all over the globe as well as for the assembling and preparation of Czechoslovak military forces. In France, the way was cleared in April 1939 for Czechoslovak officers and men to join the French army, while in Poland a Czechoslovak military group was constituted in Cracow. It was only after the outbreak of the German-Polish war that military and diplomatic action enabled Czechoslovakia to be aligned with the powers who were at war with nazi Germany. On Sept. 3, 1939, the president of the Polish republic issued a decree concerning the formation of a Czech and Slovak legion, which shared in the fighting against the Germans on Polish soil. On Oct. 2, 1939, an agreement was signed concerning the reconstitution of the Czechoslovak army in France. In the diplomatic field, Czechoslovakia ranged itself alongside the Allies by the telegrams which President Benes sent to Neville Chamberlain, Edouard Daladier and Gen. Felicjan Slawoj-Skladkowski. They contained the declaration that Czechoslovakia was at war with the military forces of Germany and that it would stand shoulder to shoulder with the Allies until final victory was achieved and its homeland free once more. Czechoslovakia set up its political organization abroad in the first place by the formation of a Czechoslovak national committee in Paris. The committee was recognized by the British government on Dec. 20, 1939, as representative of the Czechoslovak people and qualified to arrange on the soil of the United Kingdom all that was necessary for the reconstitution of the Czechoslovak army in France. That reconstituted army, composed of volunteers residing abroad and, in particular, of officers and men who had contrived to slip out of Czechoslovakia, had already passed its war tests on the French battlefields.

After the conclusion of the Franco-German armistice, all the Czechoslovak armed forces were transported to Great Britain, which became their host and organizer, giving at the same time shelter and aid to the provisional Czechoslovak government, which, at the beginning of 1940, was set up in London. Dr. Beneš notified the British foreign secretary on July 9 of the constitution of a provisional Czechoslovak state administration composed of the president, a government headed by Dr. Jan Srámek and a state council. Recognition of the Czechoslovak provisional government on the part of the British government was accorded as early as July 21, 1940. The president and the 12 members of his government, in which Jan G. Masaryk became minister of foreign affairs and Gen. Sergej Ingr minister of national defense, had to concern themselves mainly with four categories of tasks. These were: (1) to look after the steadily growing Czechoslovak army and to direct its employment side by side with the Allied countries; (2) to take care of the interests of the Czechoslovak nation and the Czechoslovak republic by the building up and development of diplomatic and political relations with Allied countries; (3) to keep in contact with the Czech and Slovak people waging a desperate war against the German occupants under the hardest imaginable conditions; (4) to prepare systematically for the new political and economic life of the nation and state after the German defeat and the liberation of the Czech lands and of Slovakia.

As early as July 18, 1941, the government of the soviet union gave its consent to the formation of Czechoslovak military units on soviet soil, and on Dec. 12, 1943, during the visit of Pres. Dr. Benes to Moscow, a pact of friendship and postwar collaboration was concluded with the U.S.S.R. On July 30, 1941, President Roosevelt informed President Benes of the decision on the part of the United States government to appoint an envoy extraordinary to the Czechoslovak government in London; Anthony Eden, the British foreign secretary, in his letter to Jan Masaryk on Aug. 5, 1942, announced that the British government deemed itself absolved of any obligations under the Munich agreement which the Germans themselves had destroyed; the Munich agreements were also rejected by the French national committee in a letter from Gen. Charles de Gaulle to Prime Minister Šrámek, dated Sept. 29, 1942. On Sept. 22, 1944, in a joint declaration, the Czechoslovak government and the provisional French government reaffirmed their traditional policy of friendship and alliance with each other, and the Italian government, ruling after the downfall of the fascist regime, proclaimed as invalid, on Sept. 26, 1944, both the Munich agreement and the Vienna award of Galeazzo Ciano and Joachim von Ribbentrop, by which a part of Slovakia had been torn away from the republic.

Liberation.—On Oct. 18, 1944, the soviet army, with Czechoslovak formations in its ranks, penetrated for the first time into the territory of the republic through Užok

Eduard Beneš (foreground), being welcomed during a visit to the city of Pilsen (Plzeň). He ended a seven year exile when he reentered Czechoslovakia on April 3, 1945, to head a provisional



Czechoslovakia: Statistical Data

and Jasina. Subsequently it advanced with gathering speed across Subcarpathian Ruthenia into Slovakia, Moravia, and, finally, into Bohemia. From the west, meanwhile, U.S. and British armies penetrated through Germany to the Czechoslovak border and into western Bohemia. In the wake of the armies followed Czechoslovak civilian administrators. In the middle of Feb. 1945 President Beneš announced his departure for Moscow and from there to Košice, where he arrived on April 3. There a new Czechoslovak government was formed, combining the western and eastern parts of the Czechoslovak resistance movement and formulating the principles of government for a new Czechoslovakia. On May 5, 1945, Prague rose in arms against the German occupants, finding them prepared for a desperate, destructive last stand. Authority in Prague was taken in hand by the revolutionary national council, whose fight ended victoriously with the assistance of the

Red army. Prague welcomed on May 10, 1945, the members of the government headed by Prime Minister Zdeněk Fierlinger, and on May 16 prepared a tumultuous reception for President Beneš. (J. G. Mk.)

Czechoslovakia After Liberation.—The new Czechoslovakia had to cede its eastern province of Carpatho-Ukraine to the U.S.S.R.; minority rights were abolished and the German minority, the Sudeten Germans, numbering more than 3,000,000, were forcibly removed from the country and expelled into Germany; a new relationship between the Czechs and the Slovaks was sought which granted Slovakia a larger autonomy; the Communist party became the strongest single party in the new state and Czechoslovakia's foreign policy which formerly had been oriented toward France was now aligned with that of the U.S.S.R. On Oct. 24, 1945, all large industrial corporations and all natural resources, public utilities, transport, commercial banks and insurance companies became state property.

On Oct. 28, 1945, the Czechoslovak provisional national assembly met. It consisted of 300 members, 200 Czechs and 100 Slovaks, appointed by the four authorized parties, the Communists, the Social Democrats, the Nationalist Socialists (Dr. Beneš's party), and the Catholic Peoples' party. No other parties were allowed in Czechoslovakia.

General elections were held on May 26, 1946. In these the Communists gained 114 seats (21 in Slovakia), the Social Democrats 39 seats (2 in Slovakia), the Nationalist Socialist 55, the Catholic Peoples' party 46, the Slovak Democrats—corresponding to the Catholic Peoples' party—43, and the Slovak Freedom party—corresponding to the

	1938		45		
Item	Value (000's omitted)	Amount or Number	Value (000's omitted)	Amount or Number	
Exchange rate United States		1 koruna = 3 cents		1 koruna = 2 cents	
Great Britain	\$446,012 (£91,228) \$445,908 (£91,206)	135.5 korunas =£1	\$627,720† (£155,762) \$778,480† (£193,171)		
Gold reserves	\$91,990 (£18,816) \$1,632,903 (£333,995)		\$30,000 (£7,444) \$1,952,820† (£484,571)		
Highways		8,267 mi. 43,718 mi.‡ 881 mi. 6,540 mi.		8,197 mi.\$ 43,623 mi. 912 mi.	
Codl		17,455,943 tons 17,666,655 ,, 1,823,251 ,, 55,596 ,,		12,593,942 ton 16,989,316 " 307,897 " 345 "	
Potatoes . Fodder beets . Sugar beets . Clover . Rye . Wheat , .		10,834,617 tons 5,262,441 ,, 5,170,589 ,, 3,171,978 ,, 2,101,094 ,, 1,999,793 ,,		6,747,140 tons 3,538,156 " 3,657,479 " 3,253,365 " 1,032,728 " 1,121,726 "	
Livestock Poultry. Cattle		43,981,767 4,938,133 3,612,166 1,114,310		13,785,076 3,933,824 2,181,284 1,306,929	
Exports—Total Manufactures Raw materials Foodstuffs Imports—Total Raw materials Manufactures Foodstuffs	\$355,096 (£72,632) \$261,338 (£53,454) \$65,673 (£13,433) \$20,456 (£5,411) \$290,880 (£59,497) \$147,746 (£30,220) \$91,817 (£18,780) \$45,631 (£9,333)	•••	\$9,670¶ (£2,400) \$5,878¶ (£1,456) \$3,791¶ (£941) \$201¶ (£50) \$14,764¶ (£3,664) \$9,428¶ (£2,339) \$2,989¶ (£742) \$722¶ (£179)		
Defense Standing army personnel Reserves Standing air force personnel Military expenditures	\$166,407 (£34,037)	205,000 1,685,000 6,600			
Education Elementary schools Students Secondary schools Students Vocational schools Students Universities Students		12,750° 1,683,069° 220° 106,810° 2,108° 175,136° 11° 17,387°		14,817† 1,528,081† 261† 101,730† 1,205† 284,122† 15†	
*Bohemia, Moravia and Silesia, and †1946. ‡1939. §State oper	Slovakia only; Carpathian ated only.	Ruthenia no longer a	part of Czechoslovakia. to December only. 9193	56,631† 37.	

Nationalist Socialist party—3 seats. The new government was again a coalition government of all four parties, with the veteran Communist, Klement Gottwald, as prime minister. (H. Ko.)

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Czechoslovak Literature

See CENTRAL EUROPEAN AND BALKAN LITERATURE.

Dafoe, Allan Roy

Dr. Dafoe (1883-1943), Canadian physician, was born May 29, 1883, at Madoc, Ont., the son of a country doctor. He took his degree in medicine at the University of Toronto in 1907 and practised in several Canadian mining towns before settling in Callander, an Ontario lumbering community. On the morning of May 28, 1934, he was called to the farmhouse of Oliva Dionne, a French Canadian farmer, to attend a childbirth. In the space of an hour, Dr. Dafoe delivered five baby girls to Mme. Dionne. Convinced that the infants could not live, he baptized them separately. The children, however, did survive, and then Dr. Dafoe realized that in delivering quintuplets, he had made medical history. He became legal guardian of the five Dionne babies, but resigned in 1999 because of friction with the parents of the children. Thereafter, Dr. Dafoe devoted most of his time to the children in his capacity as a personal physician. He became nearly as famous as his protégées, and his life was fictionalized in motion pictures. He died at North Bay, Ont., June 2, 1943.

Dairy Industry, Bureau of

See AGRICULTURAL RESEARCH ADMINISTRATION.

Dairying

World dairy production was at a high level in 1937 and was stimulated by the outbreak of World War II. Losses of dairy cattle began in Europe as countries were overrun by armies and continued until 1946. Total cattle numbers from the prewar average of 1936–40 declined about 12% in Europe, 7% in Asia and 22% in the U.S.S.R. A large part consisted of dairy animals, since nearly all cows are milked in Europe. On the other hand, there was a big increase in South America, New Zealand and South Africa. The dairy production of Europe recovered slowly in 1946. Denmark alone was able to meet domestic needs and supply small quantities for export. New Zealand and Australia were not able to equal their prewar exports.

In the United States, the dairy industry on farms was starting on an upward cycle in 1937 after a decline that had continued from 1934. Production per cow also began an increase in 1937 which lasted until 1942. For 70 years the period 1934–38 was the only one in which the number of cows had not steadily increased. These factors placed the productive dairy industry in a position to make the remarkable expansion needed in World War II.

The number of milk cows on U.S. farms was estimated by the U.S. department of agriculture at 24,649,000 head on Jan. 1, 1937 and increased steadily to 27,674,000 head in 1945, when a slight drop was recorded to 26,785,000 head on Jan. 1, 1946. In 1939 the number of heifers saved by dairymen for milk cows reached 5,800,000, a number

Number of Milk Cows in the U.S., 1937-46 (On Jan. 1)

									,						
									24,649,000	1942					26,398,000
									24,466,000						27,106,000
									24,600,000						27,655,000
									24,926,000						27,674,000
1741	٠	٠	•	•	•	٠	•	•	25,478,000	1940					26,785,000

much larger than was needed for normal replacements, indicating the plans of dairymen to expand to meet an expected war demand for milk. During 1940 the number of cows increased by more than 300,000 head. In Sept. 1941, the U.S. secretary of agriculture called for a further increase in milk production to provide supplies for lend-lease. Full feeding and extra milking was suggested as means to increase production in addition to enlarging herds by keeping more heifers.

U.S. milk production responded to the increase in the number of cows and to better feeding and care. From a total of about 103,000,000,000 lb. in 1937, the total grew steadily to the record high of 122,066,000,000 lb. in 1942, then declined a little in 1943 and 1944 before climbing to a new record of 123,000,000,000 lb. in 1945. Of these totals, about 2,826,000,000 lb. was estimated to have been produced by cows not on farms as measured by the census.

The uses of milk in the U.S. changed during the war period as the need shifted. Before the war, about 32,000,-000,000 lb. was used as fluid milk or cream; 36,000,000,000 lb. for creamery butter; and 7,000,000,000 lb. for cheese and only about 162,000,000 lb. for dry milk. By 1944, the amount used as whole milk had increased to 44,000,000,-000 lb.; creamery butter had shrunk to 29,900,000,000 lb.; cheese had increased to 10,100,000,000 lb. and dry milk was taking nearly 1,500,000,000 lb. Butter production declined by regulation to allow dry milk and cheese to be made for the U.S. armed forces and lend-lease requirements. Fluid milk consumption grew steadily throughout the decade. Per capita fluid milk and cream consumption increased from an average of 340 lb. during the period 1935-39 to 450 lb. in 1946. At the same time, per capita butter consumption dropped from about 16 lb. to 12 lb. A shift in the method of marketing also took place in that a greater proportion of the milk was sold as whole milk instead of as cream.

The U.S. dairymen faced serious difficulties during the war period because of advanced cost of feed and higher wages and scarcity of labour. High protein feeds advanced steadily during the decade 1937–46, levelling out from 1943–46. The average returns for milk rose from \$1.92 per 100 lb. in 1937 to \$3.02 in 1944 and through 1945 and 1946.

Price support measures were introduced by the U.S. government in 1941 in the form of minimum prices, which remained in effect until the end of 1944. Minimum prices of milk and butterfat were announced under the Steagall act in 1941 providing that prices were to be supported at not less than 85% of parity, later, in 1942, advanced to 90%. In Oct. 1943, dairy production or feed payments were begun to offset increased costs without increasing the retail price to consumers. Ceilings were placed on feed grains. In 13 large cities the government bought and resold fluid milk and paid the loss from increased producers' prices without a corresponding increased price to consumers. The total cost of these subsidies in 1945 was about \$602,000,000,000, of which \$500,000,000 was in the form of production payments direct to dairymen.

The value of U.S. milk cows averaged \$54.30 per head in 1935-39 and advanced steadily to \$126.00 in the spring of 1946. Good heifers were even more advanced in price. The gross farm income from dairy products sold and used on the farm increased from \$1,930,985,000 in 1937 to \$3,526,697,000 in 1944. This compares with a total of \$11,186,000,000 for all livestock and livestock products and a total of \$8,604,000,000 for all crops. Dairying remained the principal agricultural industry in the U.S. (See also BUTTER; CATTLE; CHEESE; EGGS; MILK.) (J. C. MS.)

Dakar

See French Colonial Empire; World War II.

Daladier, Edouard

Daladier (1884-), French politician, was born June 18, 1884, at Carpentras, son of a poor baker. Scholarships aided his education. After graduation from the Ecole Normale Supérieure in Paris, he taught history. In World War I he was promoted from corporal to captain of infantry. In 1919 he was elected deputy for the department of Vaucluse as a Radical-Socialist; he was continuously reelected until 1940. In 1924 he became minister of colonies and served various governments, assuming the portfolios of war, public education, public works, foreign affairs and national defense. In 1933 as premier of France he formed a ministry which lasted ten months; his second, in 1934, was defeated after a few days over the Stavisky scandal. In April 1938 he formed a third ministry and took part in the Munich conference; his ministry was reorganized Sept. 13, 1939, as a war cabinet, which fell March 20, 1940. After the fall of France he was arrested and tried for war guilt at Riom in 1942; he was imprisoned in France and Germany. In 1945 he testified against Marshal Henri Philippe Pétain, charging plots with nazis dating to 1934. Daladier was elected to the constituent assembly June 2, 1946. Challenged on his war record, he was seated July 19 by a vote of 311 to 132.

Dalai Lama

See TIBET.

Dalmatia

See YUGOSLAVIA.

Dalton, Hugh

), British politician, was born Aug. Dalton (1887-26, 1887, at Neath, Glamorganshire, Wales, the son of a cleric who had tutored King George V. Educated at Eton, King's college, Cambridge, and the London School of Economics, he passed bar examinations in 1914 but joined the army, serving in France and Italy. After World War I he joined the Labour party and was elected to commons for the Peckham division. He was parliamentary undersecretary of the foreign office, 1929-31, under Prime Minister James Ramsay MacDonald but was defeated in 1931. Returned in 1935, he became minister of economic warfare in Winston Churchill's coalition cabinet of 1940 and president of the board of trade in 1942. On July 27, 1945, he was named chancellor of the exchequer by Prime Minister Clement Attlee. In 1946 he presented a budget estimating receipts at £3,193,000,000 (\$12,772,000,000), less than 3% below those of 1945–46, and expenditures of £3,837,000,000 (\$15,348,000,000), a decrease of 31%. He proposed to repeal the 60% excess profits tax and to raise the earned income allowance from 10 to 121/2%. On Oct. 3, 1946, he was elected chairman of the board of both the World bank and the International Monetary fund, succeeding U.S. Treasury Secy. John W. Snyder.

Damaskinos

Archbishop Damaskinos (1889?—), Greek prelate and statesman, was born Dimetrios Papandreou in 1889 at Dobritza in Thessaly, Greece. He studied law and theology at the University of Athens, served in the Greek army as a

private during the Balkan wars in 1912 and took his holy vows as a priest in the Greek Orthodox Church in 1917. Four years later (1921) he was appointed bishop of Corinth. Later he was raised to the rank of a metropolitan. In 1938 his election as archbishop of Athens and all Greece was voided by Premier Metaxas, who appointed Bishop Chrysanthos of Trebizond to the post. Damaskinos went to reside in a monastery until 1941, when he was recalled by the Holy Synod to replace Bishop Chrysanthos who had refused to swear in the pro-axis premier, George Tsolakoglu. Damaskinos, however, opposed German policy and went so far as to urge orthodox Greeks to conceal Jews to prevent them from falling into nazi hands.

In late 1944 during the civil war between royalists and leftists in Greece, Archbishop Damaskinos was selected, maiffly through the efforts of Winston Churchill, to serve as regent of Greece. In the following 16 months the archbishop appointed no fewer than five premiers in an effort to solve the political crisis, and even formed an interim cabinet himself in Oct. 1945. After the Royalists won the national elections of March 31, 1946, Constantin Tsaldaris became premier and Archbishop Damaskinos offered his resignation. But following an appeal from Ernest Bevin, British foreign secretary, the archbishop decided to remain as regent. Four days after the plebiscite of Sept. 1, which formally returned the monarchy, he resigned as regent (Sept. 5, 1946).

Dams

During the early part of the period 1937–46, an increased undertaking of vast public works programs by governments throughout the world involved the construction of a great many dams for flood control, irrigation, navigation, power and water supply.

In the latter half of the ten-year period, military requirements led to the stopping or slowing down on a number of dams not needed or less essential in production of war materials. Construction on other dams was continued and expedited where they were needed for power and food production or for increased water supply for expanded industrial centres.

Because of the attitude on the part of many national governments that river development should be carried out on a regional basis, dams of tremendous magnitude were built during the period. Multi-purpose developments were undertaken by these national governments, much larger in scope than those ordinarily undertaken by local groups who were not interested or did not find it advantageous to co-operate in constructing the extensive combined developments. The great financial resources and broad interests of the national governments resulted in large reservoirs, requiring large dams, to permit storage of flood waters for the various combined purposes of irrigation, navigation, power, water supply and reducing the damages caused by floods.

The largest dams completed during the period 1937-46 were built in the United States. A description of some of the most notable developments follows.

Grand Coulee.—The Grand Coulee dam on the Columbia river in the U.S., completed in 1942, was the largest masonry structure ever erected by man to that date. Its total of 9,930,000 cu.yd. of concrete was about seven times the size of the great Cheops pyramid in Egypt. The dam was more than 50% larger than Shasta dam of the Central Valley project in California, the second largest masonry structure in the world.

Grand Coulee dam was built at a point where a glacier once dammed up the river, forcing it to find a new course. Later the glacier receded and the river returned to its original bed, 600 ft. below, leaving a dry canyon 50 mi. long and 2 to 5 mi. wide, now known as Grand Coulee. The dam was built in the original river bed, creating a reservoir from which water would be pumped into another reservoir to be formed in the upper end of the now dry Grand Coulee. This second reservoir was to be created by constructing two earth and rock-fill dams across the Grand Coulee. The entire project involved lifting the water a maximum of about 370 ft. to utilize a large portion of the hydroelectric power to be generated at the Grand Coulee dam. From the second reservoir the water was to flow through approximately 250 mi. of main canal, to irrigate the fertile basin of the Columbia river in the area known as the Big Bend. It was anticipated that some 10,ooo families would find new homes on the 1,200,000 ac. irrigated by the great dam.

The dam upon completion was 550 ft. in height, with a base width of 480 ft. at its maximum section. Its total length was 4,173 ft., of which 1,650 ft. was used as a spillway. The spillway was capable of passing a flood of 1,000,000 cu.ft. per second, which would create a fall of water five times the average flow of Niagara falls and three times as high.

The tremendous size of the dam required that it be built in individual vertical blocks about 50 ft. square, rather than as one solid mass. Cooling water was circulated through 2,200 mi. of one-inch tubing, buried in the concrete, to dissipate the heat generated by the hydration of the cement. Assisting materially in flood control and river regulation, Grand Coulee dam had a storage capacity of 9,517,000 ac.-ft.

Ultimately, nine generators were to be housed in each of the two power plants at the dam, with a total capacity of 2,550,000 h.p. expected to produce more than 8,100,000,000 kw.hr. of firm power annually. The energy from six of the generators in the plant on the west side of the river was to be used for pumping. The remainder was to be sold to the market which was expected to develop when the irrigated land came into use.

Shasta.—Completed in 1945, Shasta dam on the Sacramento river in California was the second highest dam in the world at the time of completion, second only to Boulder dam. It was also second only to Grand Coulee dam in size.

The construction of the dam required about seven years. In addition to the more than 6,000,000 cu.yd. of concrete required for the dam itself, several major undertakings were necessary in preparation for the construction. The relocation of 30 mi. of the Southern Pacific railroad involved nearly 5,000,000 cu.yd. of grading. Excavation for the foundation of the dam involved another 4,000,000 cu.yd. A belt-conveyor system was built to transport sand and gravel for the concrete 9½ mi. to the dam site. A 460 ft. high steel tower was built, from the top of which seven cableways radiated to deliver concrete to all parts of the dam. In the spring of 1940 the worst flood of record occurred on the Sacramento river, severely damaging the bridges for the belt conveyor, access road and railroad relocation and delaying the work.

The dam was constructed as part of the Central Valley project, to provide about 4,500,000 ac.-ft. of storage for flood control, irrigation and power. Ultimately 379,000 kw. of power would be developed.

Fort Peck.—The largest dam in the world, Fort Peck, begun in 1934 and requiring six years for completion, was built on the Missouri river in Montana. Constructed for purposes of flood control, navigation improvement and power development, it had a maximum height of 242 ft., a crest length of 9,000 ft. and contained 109,000,000 cu.yd. of hydraulic-placed earth fill. Four large dredges were built at the dam to dredge material from the valley bottom and pump it into place on the dam through large steel pipe lines.

The pipes were 28 in. in diameter, and were five mi. long at certain stages of construction.

On Sept. 22, 1938, with more than 95% of the fill completed, a slide occurred in the upstream face of the dam near the east abutment, involving approximately 5,000,000 cu.yd. of fill. Investigations indicated that the weathered shale and bentonite seams in the foundation were too weak to hold up under the tremendous shearing force exerted by the dam. The damaged portion was entirely removed and rebuilt with a flattened upstream slope, causing a delay of more than a year in the final completion of the structure.

The reservoir created by the dam was to store 19,412,000 ac.-ft. of water, exceeded only by Lake Mead, the storage reservoir created by Boulder dam, with more than 31,141,-755 ac.-ft.; 105,000 kw. of power would be developed.

Tennessee Valley.—One of the most extensive river development programs ever undertaken, that of the Tennessee river, was practically completed during the ten year period 1937–46. Eight large dams and several of moderate size were built during this period, adding more than 15,000,000 ac.-ft. of storage for controlling floods and developing more than 1,400,000 kw. of additional hydroelectric power. The construction of the dams created a continuous 9-ft. deep navigation channel from Knoxville, Tenn., to the river mouth.

Many other large dams were constructed in the U.S. during this period, some of which are listed in the accompanying table.

British Dams.—One of the largest earth-fill dams in the British Isles, Ladybower dam at Bamford, England, was officially dedicated Sept. 25, 1945, by King George VI. The 137 ft. high dam was constructed for the Derwent valley water board to supply Nottingham, Leicester and several other towns of Derbyshire. Its storage capacity was 6,300,000,000 gal.

The Shingmun dam, highest dam in the British empire, was completed early in 1937 at Hong Kong. Earthquake danger, high cost of concrete material and cheap labour dictated the construction of a unique type of hand-laid rock fill. The 285 ft. high dam consisted of an impermeable upstream panel mounted on a heavy thrust block, backed up by the rock fill and having a thin wedge of sand in between to equalize the pressure as the rock fill settles.

The Vaalbank dam of the Vaal-Hartz project, largest irrigation scheme in South Africa, was completed in 1938. The Kalkfontein dam, second largest in South Africa, was completed in 1940. It was built on the Riet river, 113 ft. high, 1,040 ft. long and contained 270,000 cu.yd. of rock fill.

The Emerson barrage, largest of its type in the Punjab, was completed in March 1939; 3,025 ft. long, it contained more than 800,000 cu.yd. of masonry and was to provide irrigation for nearly 1,000,000 acres.

The Pegu-Yomas dam in Burma was completed in 1940, to supply water for the city of Rangoon. It was notable for its reinforced concrete core wall designed to withstand earthquakes.

				Maxi-					
				mum Height	Crest Length	Volume			Year Com-
Name of Dam	River	Place	Туре	(Feet)	(Feet)	(Cu. Yds.)	Purpos	e* Built by	pleted
Alcova Bakhadda	North Platte	Wyoming, U.S. Algeria	Earth and rock fill Rock fill	265	763	1,600,000	į	U.S. Reclamation Bureau	1938
Bartlett	Verde	Arizona, U.S.	Concrete, multiple arch	146 287	722 1,063	420,000 182,440	i	U.S. Reclamation Bureau	1937 1939
Bonneville Bu-Hanifa	Columbia	OregWash.,U.S. Algeria	Concrete, straight gravity	170	1,250	596,500	N,P	U.S. Army Engineers	1937
Cajalco	Offstream	California, U.S.	Rock fill Earth fill	180 210	1,510 2,170	1,000,000 3,162,585	w	Metropolitan Water District (California)	1937
Cherokee	Holston	Tennessee, U.S.	Earth fill and concrete	212	6,860	3,379,000	F,N,P	Tennessee Valley Authority	1942
			gravity			(earth) 700,000			
Cogoti	Limari	Chile	Rock fill	246		(concrete)			7.000
Conchas	S. Canadian	New Mexico.U.S.	Concrete, straight gravity	236	6,250	760,000 1,723,000	F,I	U.S. Army Engineers	1939 1939
Dale Hollow Deer Creek	Obey Provo	TennKy., U.S. Utah, U.S.	Concrete, straight gravity Earth and rock fill	183	1,700 1,256	2,809,800	F,P	U.S. Army Engineers	1943
Denison	Red	OklaTex.,U.S.	Earth fill	235 165	14,000	17,370,000	I F,P	U.S. Reclamation Bureau U.S. Army Engineers	1941 1944
Dique la Vina Douglas	French Broad	Argentina Tennessee, U.S.	Concrete arch Earth fill and concrete	345		223,000	I,P P	Province of Cordoba	1943
Douglas	Trench blodd	remessee, 0.3.	gravity	160	1,682	1,000,000 (earth)	r	Tennessee Valley Authority	1943
	,					536,000			
El Azucar	San Juan	Mexico	Earth fill	142	18,900	(concrete) 5,677,031	F,I	Mexican National Commission of	1943
Fontana	Little Tenn.	N. Carolina, U.S.	Concrete, straight gravity	470	1,750	2,600,000	F.P	Irrigation Tennessee Valley Authority	1944
Fort Peck	Missouri	Montana, U.S.	Earth fill, hydraulic	250	10,578	109,000,000	F,N,P	U.S. Army Engineers	1944
Friant Gebel Aulia	San Joaquin White Nile	California, U.S.	Concrete, straight gravity	320	3,430	2,045,860	1	U.S. Reclamation Bureau	1942
Gebei Aulu	Wille Mile	Egypt	Earth fill and masonry gravity	45	16,404	384,550 (earth)	ı	***********	1937
			•			512,440 (masonry)			
Ghrib	Chélif	Algeria	Rock fill	233	886	855,000	i	•••••	1937
Grand Coulee Green Mountain	Columbia Blue	Washington, U.S. Colorado, U.S.	Concrete, straight gravity Earth and rock fill	550 274	4,173 1,100	9,930,150	F,I,P I,P	U.S. Reclamation Bureau	1942 1943
Guntersville	Tennessee	Alabama, U.S.	Earth fill and concrete	94	3,979	4,316,347 775,480	F,N,P	U.S. Reclamation Bureau Tennessee Valley Authority	1939
		g.	gravity		•	(earth)			
						295,684 (concrete)			
Hamilton Hansen	Colorado Big Tijunga	Texas, U.S. California, U.S.	Concrete, multiple arch Earth fill	158 122	11,500	189,000	P F	Lower Colorado River Authority	1937
Hiwassee	Hiwassee	Tennessee, U.S.	Concrete, straight gravity	308	10,509 1,287	14,000,000 795,000	F,N,P	U.S. Army Engineers Tennessee Valley Authority	1940 1940
Kentucky	Tennessee	Kentucky, U.S.	Earth fill and concrete	160	8,650	4,000,000	F,N,P	Tennessee Valley Authority	1944
			gravity			(earth) 1,300,000			
Kingsley	North Platte	Nebraska, U.S.	Earth fill, hydraulic	162	10,200	(concrete) 26,000,000	F,I,P	Central Nebraska Public Power and	1941
• •		•					• •	Irrigation District	
La Angostura	Bavispe	Mexico	Concrete arch	291	515	175,871	I,P	Mexican National Commission of Irrigation	1941
Madero	Arroyo Hondo	Mexico	Rock fill	164	• • • • • •	258,964	1	Mexican National Commission of	1938
Marshall Ford	Colorado	Texas	Concrete, straight gravity	270	2,423	1,868,700	F,I,P	Irrigation U.S. Bureau of Reclamation	1941
Nantahala	Nantahala North Fork	N. Carolina, U.S. Arkansas, U.S.	Rock fill, earth blanket Concrete, straight gravity	260 230	880 2,624	1,829,000 1,470,000	P F,P	Nantahala Power & Light Co. U.S. Army Engineers	1942 1944
Norfork Parker	Colorado	ArizCalif., U.S.	Concrete, constant-radius	320	856	290,640	W,P	U.S. Reclamation Bureau	1938
Pensacola	Grand	Oklahoma, U.S.	arch Concrete, multiple arch	152	5,625	500,000	F.P	Grand River Dam Authority	1940
Pickwick	Tennessee	Tennessee, U.S.	Earth fill and concrete	113	7,715	2,851,000	F,N,P	Tennessee Valley Authority	1938
			gravity			(earth) 620,000			
						(concrete)		_	
Pinopolis San Gabriel No.1	Cooper	S. Carolina, U.S. California, U.S.	Earth fill Earth and rock fill	<i>75</i> 381	10,500 1,520	2,966,000 10,809,000	P F	South Carolina Public Service Authority Los Angeles County Flood Control	1941 1937
San Gapriei No.1		-				• •		District	
Sardis	Little Talla- hatchie	Mississippi, U.S.	Earth fill, hydraulic	117	14,550	16,800,000	F	U.S. Army Engineers	1940
Seminoe	North Platte	Wyoming, U.S.	Concrete arch	295	525	175,844	I,P	U.S. Reclamation Bureau	1938
Shasta Shingmun	Sacramento Shinamun	California, U.S. Hong Kong, China	Concrete, straight gravity Rock fill	602 285	3,500 695	6,413,247 641,000	F,I,P W	U.S. Reclamation Bureau City of Hong Kong	1945 1937
Stevens	White	Washington, U.S.	Earth and rock fill	425	700	2,109,000	F	U.S. Army Engineers	1941
Taylor Park Tygart	Taylor Tygart	Colorado, U.S. W. Virginia, U.S.	Earth fill Concrete, straight gravity	204 232	613 1,880	1,1 <i>07,</i> 000 1,100,000	l F	U.S. Reclamation Bureau U.S. Army Engineers	1937 1937
Upper Narrows	Yuba	California, U.S.	Concrete, arch gravity	265	1,153				1941
Vaalbank Watts Bar	Vaal Tennessee	South Africa Tennessee, U.S.	Concrete, gravity Concrete, gravity	160 97	1,700 2,965	220,000 500,000	W,I F,N,P W	Transvaal Irrigation Department Tennessee Valley Authority	1938 1942
Winsor	Swift	Massachusetts,U.S.	Earth fill	170	2,640			Metropolitan Water District (Massachusetts	
Woronora	Woronora	New South Wales	Concrete, curved gravity	217	1,300	434,000	w	Sydney Metropolitan Water Supply, Sewerage and Drainage Board	1941

In spite of war conditions, the Mysore government continued construction of the Jog Falls scheme on the Sharavati river to develop 120,000 kw. of hydroelectric power.

*F—Flood Control I—Irrigation N—Navigation P—Power W—Water Supply

Egypt, Mexico, France.—On the White Nile in Egypt, the Gebel Aulia dam was completed in April 1937, to provide additional storage of flood waters for irrigation purposes. The dam, a combined rubble masonry gravity section and clay embankment, was 16,404 ft. long and about 45 ft. high, containing 512,400 cu.yd. of rubble masonry and mass concrete and 384,500 cu.yd. of clay fill. The reservoir created by the dam was more than 200 mi. long, varied from 3 to 5 mi. in width and provided more than 100,000,000,000,000 cu.ft. of storage capacity.

Also on the Nile river, 410 mi. below the Aswan dam, the raising of the Assiut barrage was completed in July 1938. This dam, originally built in 1902 at the same time as the Aswan dam, was built to supply water to the 250 mi.

long Ibrahimia canal, largest irrigation canal in Egypt. It was about 2,600 ft. long and was originally about 52 ft. high. Raising the dam about 13 ft. was undertaken to deliver more water to the canal, taking advantage of the additional storage created by the Gebel Aulia dam. Raising the dam involved the placing of about 175,000 cu.yd. of rubble masonry, mass concrete and concrete blocks.

The Mexican National Commission of Irrigation undertook the construction of ten dams for purposes of irrigation and power development.

Of these, three had been completed at the end of the decade 1937-46.

In France, construction of Europe's largest dam, the Genissiat on the Rhone river, was undertaken in 1939. The 330 ft. high structure bore a great resemblance, on a somewhat smaller scale, to the arrangement of Boulder dam in the U.S. The power house at Genissiat was placed across

the river at the base of the dam, instead of parallel to the river along the base of the canyon walls, as at Boulder.

Design and Construction.—There were notable advances during the ten-year period 1937–46 in the science of building dams. With the increase in number of concrete dams of great height and mass, more attention was given to the analysis of the stresses in the concrete, and the control of the quality of the concrete.

In order to reduce the cracking caused by temperature changes in the large masses of concrete with consequent leakage and uncertainty of stress distribution, special cements were developed and cooling water was used more extensively. These measures served to reduce the temperatures generated in the mass concrete by the hydration of the cement during the setting process.

The development and application of the theories of soil mechanics to the design and construction of earth dams was greatly extended during the ten-year period. Methods of analysis of soil characteristics were developed to supplement the judgment of the engineer, upon whom great reliance must be placed for the suitability of the materials and the safety of the dam. The highest earth dams ever built were completed during the decade.

Improvements in construction technique reduced the cost of large dams and speeded up the time required to build these great projects. These improvements made possible construction of dams which under less economical methods of construction could never have been built.

In constructing concrete dams, the use of cableways was common in transporting concrete from the mixing plant to the dam. Belt conveyors were used to transport aggregate materials considerable distances—9½ mi. at the Shasta dam site. In constructing earth dams, methods for transporting and compacting the earth materials reduced the cost to as low as 20 cents per cu.yd. at some dams. Large tractor-trailer units were developed capable of hauling 20 cu.yd. Belt conveyors were also used. The use of sheepsfoot rollers became common practice for compacting the earth in the dam after placement.

The two largest dams in the world, Fort Peck and Kingsley, were built during the ten-year period 1937-46 by what was probably the cheapest method of handling large quantities of earth materials. The earth was dredged from the floor of the valley and pumped through large pipes into a pool on the dam where it settled out to form the embankment.

Dams in World War II.—World War II brought about two developments in relation to dams. First, elaborate measures were taken to guard these structures against sabotage, because of the importance of dams in the production of power, in the supply of water to the population and to industry, and in the protection of the population and industry along river valleys from floods. Second, for the same reasons, military measures were prepared to attempt to destroy some of the dams of axis powers.

On May 17, 1943, the royal air force attacked and severely damaged the Möhne, Sorpe and Eder dams in Germany, releasing at least 75% of the stored water and causing the most severe floods on record in the Ruhr valley and along the Rhine river below Duisburg-Ruhrort. Several 1,500 lb. mines were dropped against the upstream face of the dams from planes flying at altitudes of less than 100 ft. Together, the Möhne and Sorpe dams controlled almost three-fourths of the Ruhr river watershed and about two-thirds of the water storage in the industrial area of the Ruhr. The Eder dam controlled the flow of the Weser

river for navigation and flood protection.

Besides the damage caused by the flooding of industrial plants and the sweeping away of bridges and railway embankments, the loss of this tremendous amount of storage seriously affected some 300 waterworks and pumping stations, extensive canal systems for navigation and many hydroelectric plants, the backbone of this great industrial region of Germany.

An Allied air force also bombed the control gates of a dam on the Pescara river in Italy on May 5, 1944, flooding German positions on the Adriatic coast and cutting off their power supply.

The Dnieprostroi dam on the Dnieper river, greatest hydroelectric development in Russia, was partially destroyed by the Russians in 1941 in an effort to thwart the advance of the German armies and to prevent its use by the Germans. The Germans, however, made partial use of the station until 1943, when they did further damage as they withdrew. Reconstruction was commenced by the Russians in 1944. By early summer of 1946 the dam was fully restored. The dam, a 110 ft. high, 2,500 ft. long curved spillway of gravity section, was originally completed in 1932.

The development was built under the supervision of engineers from the U.S., and the nine turbines and generators were built in the U.S. The original plant had a capacity of 746,000 hp. and developed 3,000,000,000 kw.hr. annually.

The table on p. 71 gives data on some of the more important dams completed during the ten-year period 1937-46. (See also AQUEDUCTS; IRRIGATION; TENNESSEE VALLEY AUTHORITY; WATER POWER.)

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Dance

The beginning of the decade 1937-46 found European governments subsidizing dancing in state ballets in Austria, Denmark, Poland, Russia and Lithuania. In Russia, the imperial ballet system was in full sway with its state-owned schools producing excellent dancers, and its famous Bolshoi theatre presenting classical ballets, old and new. However, experiments were going on, but without disturbing the traditional ballet.

In England, the Ballets Russes with Léonide Massine as maître de ballet gave their usual season at the Royal Opera house, Covent Garden. They also presented brilliant revivals of Michel Fokine's Petrouchka and Scheherazade, supervised by Fokine himself. However, English ballet was showing real progress in establishing its own dancers and choreographers. Sadler's Wells company, only five years old, won international acclaim with its ballet, Checkmate, to music by Arthur Bliss and choreography by Ninette de Valois. Its theme was a chess board duel between love and death. In the satiric vein was Wedding Bouquet by Lord Berners and Frederick Ashton with words by Gertrude Stein. The result was spicy fun poking at Edwardian manners and proof that the ballet was being influenced not only by modern ideas, but by local themes.

In France, Serge Lifar held the spotlight in the conventional ballet circles. René Blum was financing a new ballet company with distinguished young dancers, many of them trained in France by famous Russian refugee dancers and teachers. Fokine was choreographing the new ballets

In Germany, the nazi had the dance in school, concert hall and theatre meticulously regimented to fit a prescribed form more or less the work of Rudolph von Laban. Mary Wigman, who was the product of the von Laban school and one of the outstanding dance artists of Germany, was subsidized by the German republic and later taken over by the nazis. However, there arose a political conflict within the dance ranks and Wigman, always the serious artist and never the politician, fell out with the machinators and suffered under this tyranny. She finally left Dresden, her house, school and everything belonging to her, went off by herself and founded a tiny school in Leipzig among the ruins.

Even in the U.S. the dance had had a taste of state subsidy and control in the WPA dance project. With \$155,000 to spend on its dance project, the Dance Theatre was bogged down with politics, inefficiency, internal strife and propaganda. Famous dancers caught in the coils of depression were shunted off the project onto home relief while untrained pretenders took their fling at a dance career at the government's expense. Three undistinguished works were all that resulted before the project exploded with the dynamite of its own political intrigue. WPA funds allocated to a library project, however, bore permanent fruit. Under the leadership of Dorothy Lawton, music librarian of the 58th street Public Library in New York city, an extensive index of dance origins was compiled.

In ballet, the U.S. had become a remunerative place for European companies to spend a season. These companies were thoroughly European even to requiring U.S. artists to change to European names. However, there was a definite trend toward the modern in such ballets as David, Les Presages, Choreartium and Le Jardin Public.

Mikhail Mordkin, singlehanded, built a performing ballet company out of his American pupils and presented a distinguished performance of the entire classic ballet, Giselle, and the première of The Goldfish. It was at these performances that Viola Essen, then a mere child, made her debut as a ballerina, and Lucia Chase, backer of the Mordkin ballet, started her career as a character dancer.

Even more important in the growth of ballet, the U.S. was experimenting with local companies. Among these, Catherine Littlefield's company in Philadelphia presented such thoroughly U.S. ballets as *Barn Dance* and *Terminal*. This company also invaded Paris and London with its American company and American ballets and was a big success

Ballet Caravan, organized by Lincoln Kirstein to produce the ballets of young U.S. choreographers, was touring the U.S. from coast to coast with such Americana in ballet form as Billy the Kid, Pocahontas, Yankee Clipper and Filling Station.

While the "out of towners" were being shown U.S. ballet, the staid old stalls of the Metropolitan Opera house were still in frenzied controversy over the unorthodox offerings of the American ballet. Since the Russian, George Balanchine, was the principal choreographer, the contribution was far from 100% American. However, it helped in the good work of breaking through the old regime and made way for new ideas and reforms.

In Chicago, Ruth Page was creating and dancing such U.S. satires in dance as *Hear Ye! Hear Ye!* and *The Gold Standard*. She also invaded New York with these lively ballets. On the far west coast, William Christensen built up a San Francisco ballet group, as an extension of his Opera ballet in the San Francisco Opera company.

In the concert field, many of the dancers were still for-

eign artists, but the American Martha Graham had already begun her conquest of the states and Merle Armitage had published a deluxe volume of photographs of this high priestess of modernism. Ted Shawn had been touring with his all-men company for almost four years. He had even gone as far afield as London, England, with his performances. Humphrey-Weidman had their own little Studio Theatre of the Dance in New York. The Graffs had their little Concert Dance hall in Chicago.

The theatrical circles of this period thought of dancing as rhythmic relief only, and felt the public wasn't up to enjoying the art of dancing. The few fine dancers who had left ballet companies and the concert field to venture into the commercial theatre survived on their looks and personality, not on their mastery of the art of movement. The cinema at this time used the dance as an added attraction in musicals and extravaganzas, but no serious attempt had been made to photograph the dance for its own sake or to preserve dance values or sequences. That was yet to come.

Dance organizations throughout the world consisted chiefly of teacher groups who met to exchange dance steps, solve mutual business problems and top off with a bit of sociability. The English societies had gone furthest in setting standard and examination both in ballet and social dance. But both branches of the dance suffered as much from the sterility of overstandardization as they gained in organization and consistency. Educational circles relegated their dance training to the physical education department, where it was taught as gymnastics rather than as art.

De Basil's Companies.—In 1938, Col. W. de Basil's Ballet Russe de Monte Carlo, on its fifth U.S. tour, was suddenly torn asunder by a split that took Massine to Monte Carlo to join Blum's ballet, which was eventually to be known as the Monte Carlo Ballet Russe. De Basil dropped out of the picture temporarily, and the remainder of his company opened in London under the name of Educational ballets. This company subsequently left for Australia, where it left a nucleus which later started a local ballet company in Australia. Col. de Basil, however, joined his company in England again and took this company back to Australia and New Zealand, under the name of De Basil's Original Ballet Russe. Barred from Europe by war, he took his company to the United States for a tour and then left for Cuba. There, one of the few strikes in the history of the dance resulted in the company's being stranded all summer. Reorganized in the fall, it appeared in Canada with the added attractions of Nana Gollner, U.S. ballerina (one of the few Americans who refused to give up her American name although it cost her engagements in the early part of her career). Later, the company left for South America for the duration of the war, and toured there successfully for many seasons, appearing in 23 republics of South and Central America. In 1943, however, the company was practically disbanded again when Col. de Basil made an arrangement with the Theatre de Colon in Buenos Aires, Argentina, to become its dance director and bring with him a selected group from his company. Gollner and Paul Petroff left him at this time to join the Ballet Theatre in the United States. At the close of the decade, however, Col. de Basil jumped into the spotlight again, by joining the Dolin-Markova-Hurok combine, thus making a new company (but known as the Original Ballet Russe) that appeared at the Metropolitan Opera house and toured the United States in 1946. This new company also acquired the Marquis de 74 Cuevas and thereby the rights to some of the successful ballets produced by Ballet International.

Monte Carlo Ballet Russe.—The year 1938 found the Monte Carlo Ballet Russe headed by Massine. After a fall season at Covent Garden, this company toured the U.S. for six months. The following year war drove the company to the U.S. to give the previews planned for the London season. Salvador Dali's surrealist ballet to Richard Wagner's Venusberg music caused the greatest comment.

The following season the company made its first tour of South America. Returning to the United States, it gave outdoor performances at the Lewisohn stadium, Hollywood Bowl and opened at the Metropolitan Opera house, with the surrealist ballet Labyrinth among its premières for the fall of 1941. The following year Massine resigned from the Monte Carlo Ballet Russe to join Ballet Theatre, leaving the company in acute need of a choreographer. This gave Agnes de Mille a chance to present Rodeo, which she had been trying to sell for some time without success. Serge Denham, director of the company, decided to produce it as something new, different and thoroughly U.S. However, the Russian dancers of the company refused to dance in it. Denham, however, carried out his plans with the Americans in the company and a few of other nationalities. Rodeo not only proved a real hit but set a vogue for Americana in ballet form.

The Monte Carlo Ballet Russe in 1944 set a precedent by giving a popular priced season at the New York Civic centre in New York city with special matinees for high school girls and boys. The company continued to maintain its well-trained cast, its high classical standards and its noted esprit de corps. Alexandra Danilova remained the principal ballerina; Igor Youskevitch, first dancer until he was called to war; Frederic Franklin not only danced leading roles but also directed. The policy of the company was to develop leading dancers from its ranks, and it could boast of Maria Tallchief, Nicolas Magallanes, Nathalie Krassovska and Leon Danielian as excellent examples. Ruthanna Boris was a worthy addition to the company in 1943 from the Metropolitan Opera ballet. Doris Duke continued to give the company generous financial assistance.

The glamorous Mia Slavenska left the company to try a fling at a small company of her own. With the U.S. dancer David Thimar and three assisting dancers, she made a cross-country tour, with a program of divertissement and a streamlined ballet of *Belle Starr*, the U.S. lady bandit. It was successful for a couple of seasons. At the close of 1946 she announced the formation of a new company.

The leading choreographer for Ballet Russe de Monte Carlo after Massine left was Balanchine, although other choreographers did special assignments, for instance: Pilar Lopez did The Cuckolds' Fair, a ballet that suffered from the absence of real Spanish dancers; Igor Schwezoff directed the U.S. version of the Red Poppy in 1943; Frankie and Johnny was produced by Ruth Page and Bentley Stone in 1945; and in 1945 Todd Bolender choreographed Comedia Balletica. Ruth Page did a ballet on Edgar Allan Poe's The Bells in 1946, but it fell considerably short of its famous inspiration. At the end of 1946 the revolutionary American, Valerie Bettis, became the next choreographer to do a ballet for the Monte Carlo Ballet Russe.

Ballet Theatre.—The United States took the spotlight in 1940 by forming a ballet company which combined an array of stars including Russian, English and U.S. headliners. It was backed by Lucia Chase. The roster in-

cluded: the Russians—Fokine, Mordkin, Adolph Bolm and Bronislava Nijinska; the Americans—De Mille and Eugene Loring; Patricia Bowman, Karen Conrad, Essen, Gollner, and Annabelle Lyon, as all-American ballerinas; Antony Tudor, Anton Dolin and Andrée Howard as English artists of the dance.

Ballet Theatre opened in Jan. 1940 with a repertoire of new ballets and revivals. After a successful three-week season at the Center theatre, the company gave summer performances at the Lewisohn stadium, then joined the Chicago Opera company in the fall, and thereafter became an established ballet company.

The following season, Ballet Theatre played a short New York season and then devoted its summer to the International Dance Festival and school at Jacob's Pillow. At this point S. Hurok took over its management. It opened in Mexico, and from there played a season in New York, thereafter launching a transcontinental tour. Of the five new works presented, the most successful was Fokine's Bluebeard, a hilarious satire, cleverly choreographed and cast, featuring Dolin as Bluebeard, Irina Baronova as the seventh wife, Simon Semenoff as the magician. During the spring season in New York at the Metropolitan Opera house, Tudor's Pillar of Fire gave a clear movement picture of the murkiness of Victorian repression. The following season the company returned to Mexico city, this time as guests of the Mexican ministry of education. It was there, while at work on Helen of Troy, that Fokine died.

Ballet Theatre continued its career with New York seasons before and after its cross-country tour. It presented an assortment of revivals and new works without distinction until Argentinita in 1942 choreographed *Pictures of Goya* and danced the principal role.

At this time the exodus of ballet stars to Broadway began. Baronova, Sono Osato and Conrad from Ballet Theatre were among the first to answer the call of bigger salaries and popular acclaim. By 1944 even Alicia Markova and Dolin appeared with Ballet Theatre as guest artists only, and in 1945 danced nightly as soloists in a petite ballet which they choreographed for Billy Rose's Seven Lively Arts.

For the 1944 Ballet Theatre season, the witty Tally Ho by De Mille and the popular Fancy Free, a satire on sailors on leave, by the then unknown American, Jerome Robbins, and Argentinita's El Amor Brujo helped to enliven the season.

In 1945 Ballet Theatre carried on in the same tenor with Tudor's *Undertow*, which even out-tudored Tudor with a pathological murder story given a highly neurotic dance treatment. Robbins, Bolm and Semenoff each contributed a new ballet. In the spring, Michael Kidd's *On Stage* struck the public's fancy with a story about a young dancer's trials and tribulations.

By 1946, however, a change in the company terminated the Hurok management and announced a new policy. Its directors, now Lucia Chase and Oliver Smith with Peter Lawrence executive manager, announced that Ballet Theatre would become a resident American Ballet company with permanent headquarters and a school in which to train its artists and rehearse its ballets. It dedicated itself to developing U.S. artists and choreographers, with the plan including a European season each summer, and a year round schedule for its artists. Dolin and Markova stayed with Hurok to head a company under his aegis. By fall, this had been incorporated with the remains of Col. de Basil's Original Ballet Russe and opened at the Metropolitan Opera house,

Ballet Theatre, after an uneventful early 1946 season, left for Covent Garden, England, where it was well received. It returned to New York for a fall season, bringing Ashton's charming but unimportant ballet, Les Patineurs with an extravagant setting by Cecil Beaton, who also designed an artistic souvenir program for the company. A new ballet by Robbins, Facsimile, was a very clearly choreographed, well-danced version of the eternal triangle. Youskevitch, released from the United States navy, was the company's first classical dancer. Ballet Theatre played the Broadway theatre at the same time that Hurok's company held forth at the Metropolitan, thus costing both companies many empty seats. In due time, however, both companies left to tour the country.

Ballet Theatre finished its first decade without having again equalled its own brilliant first season. However, it had produced many ballets old and new to a ballethungry U.S. public. It had maintained an extravagant standard of costumes and decorations and given many U.S. artists opportunities in the ballet arts. It had done its part in popularizing ballet from coast to coast. Its greatest failure was its inability to establish a truly U.S. ballet company or, in fact, a consistent artistic leadership of any type.

The Littlefield ballet, back home from freshly-won laurels in Europe, replaced Ruth Page at the Chicago Opera ballet for 1938, and in 1939 became its official ballet. World War II disbanded her company by taking every one of its men. However, Miss Littlefield became one of the most popular Broadway dance producers during the war, and her choreography for the Center theatre ice show showed a promise in the first edition that was fulfilled by a consistent gain in variety and scope with each succeeding edition.

Jooss Ballet.-On its fourth U.S. tour in 1938, the Jooss ballet left a branch school in California. In 1939 the company toured the British Isles with two new ballets, A Spring Tale and Chronica, a ballet on dictators, and revived The Green Table by request. The following year Kurt Jooss and Sigurd Leeder were interned in England, but the school went on, and the company again toured the United States and South America with its leaders. At its next New York season, Agnes de Mille, as the first guest choreographer to do a ballet for the Jooss ballet, produced Drums Sound in Hackensack. The following year the company was associated with the Boston Light Opera company in its New York venture and then returned to England minus half a dozen of its dancers who chose to remain in the United States for one reason or another. In 1943 the Jooss ballet established itself in Cambridge, England, and toured the country with two new ballets as well as the old favourites. Their success continued with three new ballets the following year and the première of Hans Zullig's ballet Bosquet in 1945.

The Jooss ballet, which returned to the U.S. in the fall of 1946, surmounted its war difficulties and even outdid its previous record for new works, esprit de corps, good dancing and successful performances, despite unfavourable press criticism in New York city.

European Ballet.—The war brought near disaster to the Vic Wells company then touring the Netherlands; the company managed to escape, but most of the scenery was lost. Back in England, they toured the provinces, had a long season at Sadler's Wells and actually produced three new works. Miss de Valois also revived her satire on dictators, Barabau.

Ballet Rambert produced morale-building performances for war workers, and the Arts Theatre ballet, London

ballet and Ballet Rambert combined in the Arts Theatre club to give after lunch and tea performances in the war effort program. A new ballet company, Ballet International, produced *Everyman* with spoken words, and choreography by Mona Ingelsby. Ballet was considered so important that Ashton was given leave from the R.A.F. to produce *The Quest* for the Sadler's Wells ballet. Robert Helpmann made a dance drama out of Shakespeare's *Hamlet* and Oscar Wilde's *Dorian Gray*.

The return of peace doubled dance activity. A gala occasion was the return of Sadler's Wells to the Covent Garden after six years' absence in which the Garden was used as a dance hall. New and extended presentations of its three classics, Giselle, Sleeping Beauty and Coppelia were all received with the greatest enthusiasm. The International ballet put on the historic Masque of Comus sumptuously mounted, with Milton's poetic words as well as songs. Ballet Rambert celebrated its 20th anniversary as well as the return of peace by a first season at Covent Garden, and made a decided hit with Walter Gore's Mr. Punch. A number of light, witty and satiric ballets made their appearances, e.g., The Catch by Alan Carter; Assembly Hall and Mardi Gras by Andrée Howard; Les Sirenes by Ashton; Concerto Burlesco by Gore. Ballets Nègres came into being, scored, went on tour and returned for a second London season. The Anglo-Polish ballet toured the east and India.

In France, the German invasion took over the Paris Opera ballet among other things. Anxiety was felt for the Paris Archives of the Dance, but the close of the war found them intact. Lifar, star of the Paris Opera ballet, was censured for collaboration, but finally won his way back into favour. It wasn't long before the dance revived and two new ballet companies beside the Opera ballet were giving performances. The New Monte Carlo ballet featured Lifar and his choreography; Les Ballets des Champs Elysées proved a vital and important company from its beginning. Soon it had not only top-notch dances but the outstanding musicians and scenic artists of Paris. It toured and had two successful seasons in London. Paris Opera ballet revived with the beautiful Lycette Darsouval as prima ballerina. Balanchine was engaged as its choreographer at the end of 1946.

In Italy, La Scala, historic home of the Opera ballet, was destroyed by war but by 1946 was rebuilt and presented a new and ambitious classic ballet, La Taglioni. Wanda Sciaccaluga was the ballerina. Belgium had revived sufficiently to present an active season of dance.

Poland, with its ballet theatre, the Wielki, destroyed, opened in another theatre in the ruins of Warsaw. Leon Woicikowski was guest artist at the Opera house, but like many other artists had to do night club appearances in addition, to earn a living.

In Denmark, the war years produced a goodly crop of ballets; if not all new librettos, they were newly choreographed for the Royal theatre at Copenhagen. The ballet master was Harald Lander. Dancing leading roles were Margot Lander, Borge Ralov, Hans Brenaa, Svend Jensen, Svend Johansen, Knud Henriksen, Kirsten Ralov, Niels Larsen, Frank Schaufuss, Mona Vangessa. The ballets included a romantic waltz suite to music by Ravel; The Sorcerer's Apprentice; The Window, in which a Spanish señorita dances before a great mirror; Napoli, a version of the Lorelei myth; Land of Milk and Honey, a child's ballet; Qarrtsiluni, an Eskimo ballet; The Months of the Year; Fest Polonaise produced in honour of the 30-year

jubilee of King Christian X, and Spring, a ballet inspired by the brave fight of Norway against the nazis. However, this had to be cleverly concealed, so it was depicted as Norway struggling in the coils of winter; but the Danish people understood the symbolism. Another was a ballet fantasy based on Ludwig van Beethoven's tragic young love.

In spite of war, Russia took care of its dancers. During the siege of Leningrad they were transported to the Urals, where their training regime went on and new ballets were prepared. The dancers made frequent trips to the front to entertain the soldiers. During this period, classical ballet was featured, with fairy story librettos. Some of the leaders felt that in the severe stress of war this type of ballet was most soothing and inspiring to the people and released them for a few hours from their dark world.

At the close of the war, the Kirov theatre celebrated the 50th anniversary of the first performance of Swan Lake with an extravagantly mounted version. By this time the new Russia had made its influence felt on the classic ballet. Ballet master Lopukhov added athletic and acrobatic movements and incorporated many authentic folk dance steps into the repertoire. At the Bolshoi theatre, Lavrovsky used highly dramatic librettos such as Romeo and Juliet. Zakharov choreographed works of Honoré de Balzac and Alexander Pushkin. The themes on the whole were dance expression of social studies like The Serf, revolutionary motifs like Flames of Paris, Russian folklore like Heart of the Mountains, and fairy tales. Leading dancers were Ulanova, Natalie Dudinskaya, Chabukiani and Sergayev. Nina Anisimova became the first woman ballet mistress during the war and was noted for her exquisite choreography of Russian fairy tales.

Leaving the western world at the height of his success

Helen Tamiris and Daniel Nagrin in "Liberty Song," a ballet of 1942 based on songs of the American Revolution, with music arranged by Genevieve Pitot



with his Hindu musicians and ballet, Uday Shankar left for India to establish a school of the dance and allied arts with a generous endowment fund from a U.S. patron of the arts. Shankar began tours of his native land and composed a ballet which enacted the trials and sufferings of his people.

Short-lived U.S. Companies.—Something new in ballet came about before the end of the decade in the formation of Ballets for America, organized by Yurek Shabelevski, Yurek Lazowski and Tatiana Grantzeva. With Nana Gollner as prima ballerina and Tatiana Grantzeva, Kathryn Lee and Bettina Rosay as first soloists, plus a company of excellent dancers, the company set a precedent in doing away with the traditional corps de ballet and specializing in short ballets designed to show the talent of individual dancers. Two pianists took the place of the traditional orchestra. The company had an auspicious opening in Bridgeport, Conn., in Sept. 1946. Members included Kathryn Lee, Nana Gollner, Tatiana Grantzeva, Bettina Rosay, Halina Razoumova, Virginia Barnes, Yurek Shabelevski, Yurek Lazowski, Petroff, James Lyons and Shaun Obrien.

Ballets especially choreographed for the company were Les Arabesques (Massine), En Passant (Lazowski), The Gentleman Chooses a Bride (Romanoff) and Lola Montez (Caton). Two ballets previously composed by Massine were Les Matelots and The Strange Sarabande. Three famous Pas De Deux (from Don Quichotte, The Nutcracker and The Sleeping Beauty) supplied the traditional part of the repertory. Starting out on tour, the company seemed slated for success because it filled a demand for a popular evening of good dancing by a small well-integrated company with minimum overhead. However, its audiences were not large enough to support it, and it soon was forced to disband.

Three other short-lived ballet companies deserving mention were Loring's Dance Players, American Concert ballet, and Ballet International. The Dance Players toured for a season and went to New York in 1942; they were headed by Loring as dancer and choreographer. Lew Christensen was the first male dancer, Janet Reed ballerina. They produced Prairie and The Man from Midian by Loring; Jinx by Christensen. Loring's Duke of Sacramento was given during its summer session at New Hope, Pa. In the fall, Christensen went into the army and the company disbanded.

American Concert ballet was organized by a half dozen dancers who were working in the theatre but wanted to do creative work. The performances were given in rehearsal togs and were very worthwhile occasions. Programs included Balanchine's Concerte Barocco, William Dollar's Five Boons of Life, Mary Jane Shea's Sailor Bar and Bolender's Mother Goose Suite.

Ballet International opened in the fall of 1944 with some excellent dancers and able choreographers. A promising season followed, but the ballet went on the rocks because of mismanagement. Some of the best new ballets were taken over by De Basil Ballet Russe two years later.

Civic Ballet.—An important factor in the progress of the ballet during the decade was the group of local civic ballets that not only trained youthful aspirants but often produced ballets of freshness and importance. These groups aroused local interest in dance art and built an appreciative audience for the professional companies. In a few instances they grew into professional companies.

Typical of the latter was the San Francisco ballet, developed as an extension of the San Francisco Opera ballet. In 1937, William Christensen became the first

dancer of the city's opera group, and with the aid of the other two Christensen brothers, Harald and Lew, formed the San Francisco ballet. As time went on the company developed many leading dancers. Later, Ruby Asquith became its prima ballerina; the first male dancer was Peter Nelson. In 1939–42 and again in 1945, the company toured, sometimes as far east as Detroit and Chicago.

Local ballets in the states giving regular performances included Berenice Holmes' Chicago Ballet, Lillian Cushing's Colorado Dancers, Thelma Biracree's Rochester ballet, New Jersey's Young People's Dance theatre and Jan Veen's Dance Group of Boston.

Other notable civic ballets included the Volkoff ballet in Canada; the Washington, D.C. Civil ballet, organized and led by Lisa Gardner; Dorothy Alexander's Civil ballet in Atlanta, Ga.; the Sociedad Pro-Arte in Havana, Cuba, etc.

Summer Camps.—Another important development in the dance field was the establishment of summer camps and schools, comparable to the summer theatre in drama. These outdoor centres offered ideal training and rehearsal grounds and many gave regular performances that were enthusiastically attended by the natives and scores of tourists. Some dance performers drew audiences from hundreds of miles around.

Jacob's Pillow at Lee, Mass., was an example of this type of summer dance camp. First started by Shawn in 1933 to train his company of all men dancers, it was disbanded in 1940 because all the men were being drafted. The following summer, Dolin and Alicia Markova took over the place as a school, gave weekly performances and conducted rehearsals of Ballet Theatre. In 1941, a group of Berkshire residents formed a corporation which was chartered by the state as an educational, artistic, nonprofit institution. This group raised money to buy the 200-acre estate, built and equipped a fine dance theatre and during the following summer of 1942 conducted a school and dance festival, presenting some of the leading dance artists of the day in many different branches of the art. In spite of war, Jacob's Pillow carried on not only with its summer school but with its summer concert series. The first year of peace brought an enlarged student body including veterans studying under the G.I. Bill of Rights. The number of performances was also doubled, and plans were laid to make Jacob's Pillow a year-round school with a four-year course in the dance.

Ballet on Ice and Rollers.-If the dance paid tribute to the art of skating by celebrating its forms in the ballet Les Patineurs, skating returned the compliment by devoting a whole decade to putting dance steps and traditions on blades and rollers. Ballet was given its first popularity by the trained skater, Sonja Henie. Her appearances in motion pictures, featuring her in glamorous settings, introduced the world to the dance on blades. However, the first real ice ballet was staged in 1942 at the Center theatre in New York city by Catherine Littlefield as the choreographer of It Happens On Ice. In the successive years of this ice show Miss Littlefield progressed steadily toward her goal of putting classical ballets on ice. Autumn Leaves was her first success. The Nutcracker was the 1946 attraction. In the interim Miss Littlefield staged many original ice ballets celebrating various dance periods and styles.

Arena ice shows became more and more elaborate, with Chester Hale, dance director, bringing dance choreography to the Ice Capades; Catherine Littlefield doing the Sonja Henie show; and Mary Jane Lewis, the Ice Follies.

The official debut of the roller skating show was made

in 1942, with dance-trained Gloria Nord as the ballerina on wheels, or "rollerina," as she was called. Miss Nord attempted to preserve the soft fleet movement of the rollers, and her approach was always artistic rather than athletic. The show was an instant success.

In Toronto, Canada, the famous skating carnivals that drew crowds from all over America were joint projects of the local skating society and one of the leading ballet schools.

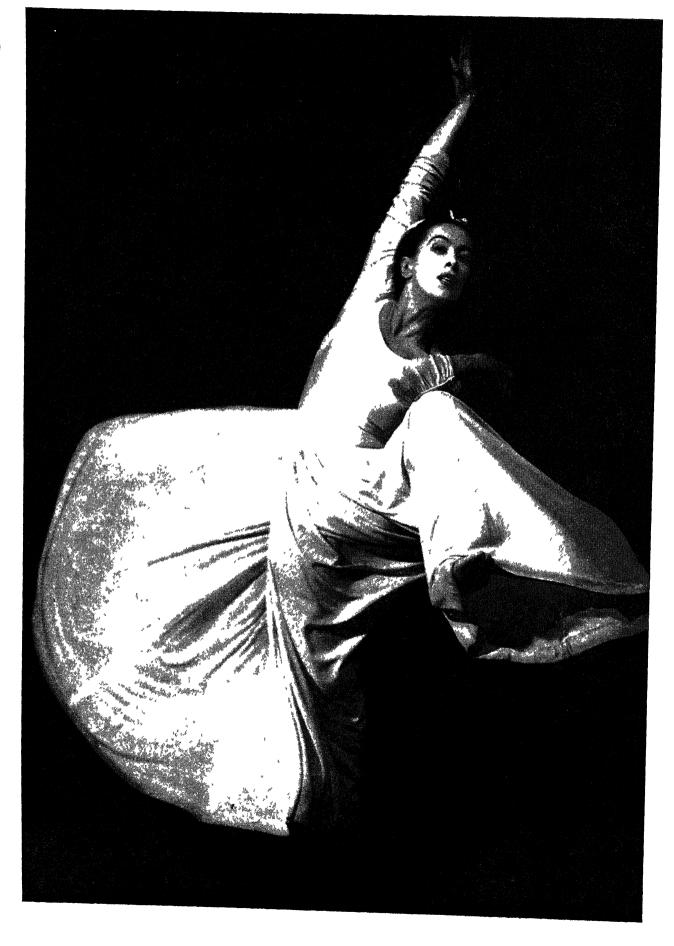
On the west coast of the United States, the San Francisco ballet company under the direction of Christensen collaborated with the ice carnival with interesting results. Also on the west coast, an interesting organization of skaters and dancers was formed to bring the arts closer together.

The movies began to feature skating attractions and built whole pictures around the art. The Czechoslovakian Vera Hruba Ralston was one, the English dancer-skater Belita another.

Modern Dance.-The so-called modern movement blossomed into worldly success during the decade 1937-46. It lost its lean and hungry look, its drab décor, and its hair shirt; it took on properties, gorgeous costumes, even some very realistic scenery. It was accompanied by orchestra, song and poetry as well as percussion. It used scarfs, flowers, hoops and maypoles as its accoutrements. It gave Broadway seasons as well as studio theatre performances and cross-country tours. Its dancers studied ethnological techniques. It founded schools, published a magazine and wrote books. It grouped around itself collaborators in music, décor and even poetry. Its librettos were taken from literature, politics, psychology, history and life. Its dancers appeared in the commercial theatre without apology, choreographed for it and saw their creations performed by the big ballet companies.

Bennington college in Vermont gave it a summer home, and later Colorado college organized the Summer School of Modern Dance. Its leading spirit continued to be Martha Graham, who produced several ambitious works each year and was commissioned to create for such memorable occasions as the Festival of Music and Dance sponsored by the Coolidge foundation. She continued to dance her own roles with a distinct style and admirable virtuosity, supported by a devout and well-trained company. Among her most successful works were: Appalachian Spring, Herodiade, Every Soul Is a Circus, Salem Shore, Death and Entrances, Dark Meadow and Serpent Heart.

The Humphrey-Weidman Studio theatre had regular seasons and guest artists. In 1936, Charles Weidman produced Quest, in 1937 Opus 51, an extensive work in pure movement. On My Mother's Side (1939) was a solo suite depicting his ancestors. Also in 1939 Doris Humphrey and Weidman together produced Decade, a ten-year history of their dance group. In 1940 they opened their own Dance Repertory theatre, a well-planned small-dance group which produced weekly programs. Within the following five years Weidman produced Flickers, a satire spoofing the silent movies and Daddy was a Fireman, a ballet telling the story of his father's rise from just plain fireman to chief. Doris Humphrey revived With My Red Fires, produced Inquest and gave an all-Bach program with José Limon as guest star. In 1945 Weidman established his own concert company and presented Dialogue, a kinetic pantomime telling the intrigue of two couples on a weekend in the country; this was televised. Goliath was a ballet based on the biblical story; A House Divided, a dance



expression of the democratic ideals of Abraham Lincoln.

Jan Veen, formerly Hans Wiener, conducted a dance group in Boston which presented, among other works, a dance dramatization of Washington Irving's *The Legend of Sleepy Hollow*. The Graffs opened a summer theatre at Fieldston, Vt., and kept their Concert Dance hall in Chicago; between seasons they toured.

The African Dance group gave a number of recitals of African ritual dances. Pearl Primus, young U.S. Negro, took these ritualistic dances with others of her own creation into a well-known night club and became a sensation. She followed with a successful season on Broadway, from there became a featured dancer of Show Boat. Margaret Wallman directed a modern dance ballet in Buenos Aires in 1940. Anna Sokolow was invited to organize the first professional modern dance group in Mexico.

Other Attractions.—One of the important dance results of World War II was the stranding of La Meri in the United States. La Meri had travelled all over the world gathering authentic costumes and dances and later giving highly educational recitals of these ethnological dances in authentic costume, accompanied by truthfully transcribed music. Unable to continue her tours after the outbreak of war, La Meri associated herself with Ruth St. Denis and founded a school of ethnological dance in New York city in 1940. By 1941 La Meri took over the whole school: by 1942 she had fortnightly programs, and by the following year she had taken larger quarters including a small dance theatre in which she gave a regular dance season. In 1944 she made a distinguished contribution in comparative dance techniques by giving a Hindu version of Swan Lake to Tschaikovsky's music. Interesting versions of other ballets followed, all done with correct ethnological techniques, e.g., Scheherazade.

In 1942 the Devi Dja, dancers of Java and Bali, were also warbound in the United States. They established headquarters in Chicago and opened an interesting night spot where they gave their authentic dances and ballets.

Edwin Strawbridge organized a company to tour the country and play to children audiences. His program each year was a dramatization of some U.S. theme e.g., America Dances, Daniel Boone, Johnny Appleseed, etc. Miriam Marmien, Angna Enters, Ivy Kitchell, Carla Goya and Marina Svetlova were irrepressible recitalists who toured the country each year.

Choreography.—Considering the growth of dance activity and the increase in the number of new ballets presented, it was surprising that the decade 1937-46 produced so few distinguished works. There were a number of classical revivals which, however interesting and valuable, could not be said to rate on the progressive side. Of the new crop of ballets in classic form, Balanchine's contributions showed innovations in enchainment and decorative group patterns. They were, on the whole, brilliant but completely academic. Of these, Ballet Imperial and Concertantes were outstanding. Madame Nijinska also carried on the classic tradition with some new and interesting formations plus fidelity to the music structure. Dollar's Constantia was probably the only real step ahead in the classical ballet. Here the choreography had fluency as well as decorative pattern. The sequences were characterized by concentrated movement, a feeling for space and a powerful emotional overtone. The pas de deux was uniquely original, decorative and expressive.

Martha Graham in "Letter to the World," a ballet of her own choreography built around the legend, rather than the life, of Emily Dickinson Satiric ballets ran the gamut from classical mythology to contemporary dictators. Fokine's Bluebeard was memorable for its deeply witty comment in dance form. The Dumb Wife, choreographed by Antonia Cobas, was delightfully original. De Mille's Three Virgins and the Devil deserved special mention as one of the earliest dance satires of the period. The Seven Heroes by Jooss was amusing, and Trudi Schoop's Comic Paper was hilarious. A Thousand Times Neigh, a satiric ballet by Ballet Caravan was used by Henry Ford to entertain the public at his concession at the New York World's Fair.

The decade also showed a tendency toward psychological ballet with a neurotic slant. Tudor excelled in this type, as in his murky Undertow. The Young Man and Death, choreographed by Roland Petit for Les Ballets des Champs Elysées, was in the same category and created a furor by having a young poet hang himself on stage. In England, Helpmann's ballet The Miracle of Gorbals, celebrating the slums of Glasgow, was a noteworthy example, as was also the English ballet The Fugitives by Andrée Howard, which was concerned with two sisters who fell in love with a fugitive. Frankie and Johnny by Ruth Page was in the same vein, but was done with less seriousness.

Of the genre ballets, Agnes de Mille's Rodeo took first place and started a whole vogue of Americana in dance form. However, Loring's Billy the Kid (1936) antedated De Mille and was danced with success for several seasons. Argentinita's Goyescas (Pictures of Goya) was noteworthy in the Spanish medium of movement.

Of the philosophical ballets, Fokine's *Paganine* rated high. Massine's somewhat decadent *Symphonic Fantastic* was important. Helpmann's *Adam Zero* was highly original in production.

Among the moderns, Martha Graham's Letter to the World, Death and Entrances and Serpent Heart set a new high as psychological drama in modern dance form. Doris Humphrey's Inquest was in the darkest possible vein, while Weidman's Daddy was a Fireman was light, human and amusing. Valeri Bettis came into prominence for her psychological dance dramas in monologue form and struck a new high in personal beauty and a new low in psychological morbidity. She was invited to do a ballet for Monte Carlo Ballet Russe in 1946. It was called Virginia Sampler.

Folk Dancing

Prior to 1937, many European countries had given periodic dance festivals celebrating the traditions of the country in a dance form; they had also compiled descriptions of dance steps and ceremonials, and established museum collections of folk crafts. This was already showing its effect on the professional forms of the dance; for instance, in Douglas Cody's ballet Folk Dance. In the United States, the Folk Festival Council of New York had organized folk dance groups of dozens of different nations and staged demonstrations and festivals in authentic costumes. The English Folk Dance society, headed by May Gadd, was busy interesting U.S. groups in the recreational value of English folk dancing.

In the ten years following 1937, the folk dance flourished in many new ways. In the depression that preceded World War II, people had been thrown more on their own resources for entertainment because they did not have surplus funds to buy it. Vacations were spent in small towns rather than at expensive resorts. The city folk danced with their country hosts and found it so

much fun that they organized folk dance groups when they returned to the city. A number of small and large folk dance festivals were inaugurated as civic and national projects.

In the United States, the folk dancing at the New York World's Fair on the American Common turned out to be one of the big attractions and introduced thousands of visitors to the joy of simple folk dances. At the close of the fair in 1940, the Folk Dance centre directed by Michael Herman was formed and continued to conduct folk dance sessions for the layman, as well as for teachers; it began publication of the magazine *The Folk Dancer* and maintained a library and information bureau.

The National Folk Festival association of America, organized by Sarah Gertrude Knatt in 1933, gave yearly festivals of increasing popularity and importance. Practically every state in the union had a folk festival society, committee or group. In 1940, the Coronado Cuarto Centennial brought thousands of visitors to Oregon and New Mexico. In that year 150 folk dance festivals were held in New Mexico alone. Lloyd Shaw at the Cheyenne Mountain school, Colorado Springs, Colo., aroused such interest in the high school boys and girls that their folk dancing society produced programs that enjoyed great success in their yearly cross country tour.

The war served as another impetus for the folk dance, not only as recreation in servicemen's centres but also for its therapeutic value in helping the disabled soldiers in convalescent hospitals and rehabilitation centres. Michael Herman prepared a special folk booklet for U.S.O. use with servicemen overseas. (L. Mh.)

Ballroom Dancing.—During the early 1930s, there had been somewhat of a lull in ballroom dancing, but from about 1935 on there was a sharp and intense increase in public interest. Popular dance tunes tumbled from the publishers' presses almost faster than they could be sold. Dancing was again mounting toward the peak of a craze. Students of the subject traced a marked similarity in ballroom dancing before each of the World Wars. In each case, about five years before the war, public taste turned toward more reckless, abandoned steps and general interest in dancing swelled, lasting throughout the war.

The fox trot type of dancing, which again became popular in the United States during 1937, influenced dancing the world over for the next ten years. During 1937, one of the earliest forms of jitterbug took hold. It was called the shag and so popular did it become that manufacturers designed shag jackets, sweaters, caps, gloves and so on. Without the shag, the Big Apple would never have become so well known, nor so long lasting.

The Big Apple was a curious phenomenon. The public first heard of it through the national news services, which reported that a new group dance was being performed in South Carolina. Arthur Murray, dance teacher, sent a representative south, but he was disappointed to discover that there was no definite, complete dance. The Big Apple meant that groups of people would gather in a circle letting one aggressive member take the place as leader. He would call out any commands that came to mind. Most callers used the customary "swing left" and "swing right," but the calls that were peculiar only to the Big Apple were "Praise Allah" and "Shine." At "Praise Allah," all of the dancers would raise their arms high in the air and, howling like banshees, would draw together in a tight knot. At the call of "Shine," a single couple would take the initiative and, going to the centre of the circle, would do their



The Lambeth walk, a dance fad of 1938, originated in England and became popular in the United States

own version of an exhibition. During each "Shine," the onlooking, circled dancers would clap hands, beat time and shout and cat-call enthusiastically.

The name Big Apple was catchy and public interest was awakened. So Murray and a talented young teacher named Thomas Gallagher worked out a Big Apple routine, naming the steps Cut That Apple, Peel That Apple, Throw Away the Core and so forth. These steps spread and the call for a "shine" became a fine chance for a couple to do a shag exhibition. The dance took hold. Exhibition troupes and leaders were hired by night clubs, hotels, roadhouses, theatres, resort hotels and cruise ships. Adults caught the fever. Whereas the Big Apple and the shag demanded the stamina of the young, older men and women fell under the spell.

By 1938 the Big Apple and the shag had spread to Europe. The tempo of shag music was quite different from the conventional fox trots of the day and the English found it impossible to dance their customary slow fox trot or their quickstep to shag music. The Scandinavians adopted it enthusiastically and called it "American Swing Dancing." In the same manner, the Scandinavians referred to all conventional fox trots as "English" dancing. Many U.S. soldiers, stationed in Italy during World War II, were astonished to find that many Italians could remember the Big Apple. The young U.S. soldiers had only a vague memory of the dance.

One of the surest signs of the growth in English dance interest during the late 1930s was the rebirth of the famous "Star Championships." These country-wide contests were originally started in 1925, sponsored by the newspaper of the same name. Almost all of the well-known dancers had been connected with the "Star Championships," yet public interest waned and the contests

had died out about 1931. In 1938, there was a new start. Professional and amateur "heats" were held all over England, with the semifinal and final competitions taking place in huge Albert hall, London. To the people of the U.S., the English taste for competition dances seemed almost unbelievable. Besides the "Star" contests, the Imperial Society of Teachers of Dancing held yearly contests for amateur dancers. These even included a junior grade classification for amateurs less than 12 years of age. In England, great emphasis was placed on correctness of footwork, posture and mechanical perfection of steps. There was no room in an English contest for imaginative or original dancing. Precedent was the strong point and prize winners had to follow the book of rules closely.

Yet, despite their conventional taste, group dances took stronger hold in England than anywhere else. In 1938 the Lambeth Walk became popular. This was danced to a tune from a popular English musical show, and the song and dance soon spread all over the world. It probably died out as quickly as it did because it depended on only one tune. The dance was done in couple formation in a circle, and any number of couples could take part. There were definite steps but they were simple to learn and repeated themselves in phrases.

The Palais Glide was another English group dance, to the tune of "Ten Pretty Girls." There was an unusual formation to this dance. Four or five couples would form a line with all members facing the same way. Then, with arms around each others' waists, they would do very simple "chorus-line-up" steps. The Palais Glide never became so popular as the Lambeth Walk and the same was true of another English group dance, Underneath the Spreading Chestnut Tree. This had a rollicking tune with the words of the chorus calling the action. Both the Palais Glide and the Chestnut Tree were danced in the United States but died out rather quickly.

During 1938 the vogue for South American dancing grew. Rumba music was played in the big cities and the samba was beginning to be introduced.

Annual Harvest Moon dancing contest in New York city, 1941. About 20,000 spectators attended the finals. The photograph shows Negro contestants performing the "boogie-woogie boost"



While the English learned to "Peel That Apple" and the people of the U.S. learned to "Walk down Lambeth Way," the French were taking up the conga. This was especially popular when done in group formation, in what was called a "conga chain." The conga music was infectious; the steps were simple and with the impetus given by the smart crowds on the Riviera, the conga soon spread. It was done all over Europe and in the U.S., too. Although the conga craze was short-lived, the dance had a revival during World War II. This probably was because of the conga's being such an easy group dance and during wartime people favour gathering in groups. Conga chains again became popular and were used at all servicemen's and officers' club dances.

Having seen the popularity of so many English group dances, Arthur Murray watched for news from London and, in 1939, heard of the Boomps-a-Daisy, also done to only one tune; but the tempo was a perennial favorite, a waltz. Murray sponsored the dance in the U.S., and it swept the nation. The Boomps-a-Daisy was far more popular in the United States than in Europe and it lived longer than any of the other group dances. Perhaps experts in human behaviour could explain this popularity. They could tell why bumping a partner's hips should be so titillating. At any rate, senators "boomped" in Washington, the dance was used at every college prom, and it was seen in the most exclusive hotels and night spots in every big city. A popular theatrical revue playing in New York had the chorus girls coax staid patrons to join them in dancing Boomps-a-Daisy up and down the aisles of the theatre. With a Hands, Knees and Boomps-a-Daisy, adults everywhere played this childish dance game.

About this same time, the "Beer Barrel Polka" became a best-seller. Many recordings were made and it was a favorite juke-box tune. Old timers remembered the polka and enjoyed the familiar hop, skip and a jump. They puffed through it and youngsters picked up the dance quickly.

Restaurateurs had discovered that an audience likes to participate in entertainment. Patrons had enjoyed entering Big Apple circles, had gleefully hung on to conga chains. Merely to sit and watch professional entertainment lacked personal excitement. And so the Champagne Hour became popular throughout the country. This was a form of contest, staged by a pair of exhibition dancers or teachers. The couple would exhibit a dance, perhaps teach a basic step, and then the man dancer would choose women as partners and the girl would dance with men guests from the audience. Then, with all of the participants in a line, the audience would judge the winners by applauding. The effect of these Champagne Hours on general ballroom dancing could not be overlooked. With a skilful professional partner to guide them, people who had not danced for years found it easy and became eager to learn the new steps. Also, these contests endured. The leading hotel in New Orleans maintained its popular Champagne Hour, as did hotels in many other cities. Other forms of audience participation also proved popular. There were "Dance Ouizzes" with the audience guessing the names of older dances such as the Bunny Hug, the Castle Walk and the Turkey Trot. These quiz games were run as a form of bingo. Cards, naming the dances, were distributed to the audience. An exhibition team would do "Dance No. 1" and the audience marked the appropriate name.

While these group dances and novelties were popular, jitterbug dancing was not forgotten. Toward the end of

1939, during the crisis of impending war, dancing became frenzied, with emphasis on the jitterbug. By 1940 rumba music began to come into its own. Many Cuban musicians had gone to the United States to popularize their national style. A great many rumba tunes were written and spread throughout the country on phonograph records, over the radio and through motion pictures. Dancers were concerned with learning a more authentic Cuban style. People who had not shown interest in dancing for years began to take lessons.

During 1940 the only new group dance was a rather graceful one, too difficult for sweeping popularity—La Varsoviana, popularly known as the Little Foot. It was an old dance, a combination of mazurka and schottische and was first revived in the southwestern part of the United States. La Varsoviana was featured and popularized in a motion picture named Arizona. During 1940 the movies placed much stress on dancing. Pictures such as Dance, Girl, Dance, Down Argentine Way and the Fred Astaire picture Second Chorus were high on the popularity list.

From 1940 on, interest in the tango dropped as swiftly as the vogue for rumba grew. Europeans and people of the U.S. called all Cuban music by the name rumba. In Cuba, however, there was a sharp differentiation. There were the slow rumbas, which the Cubans classified as bolero, cancion bolero or bolero son. The danzon, a quiet, medium tempo, was danced in a very conservative style. The danzonette—similar to the danzon—had shorter music and more life. The guajero had a slow to medium tempo. Others included the son montuno—medium with a fast ending—and the fast rumbas, the guaracha and the montuno.

Cuban dance music is easy to recognize because the instruments are distinctive. The maracas, dried gourds filled with buckshot, are shaken like rattles. The bongo is made of two small drums, fastened together and held between the knees, drummed upon with the fingers. The clavas, two pieces of hard wood about six inches long and an inch thick, give a sharp, reverberating sound when struck together.

During 1941 the conga was used as a partner dance. It demanded more floor space than jitterbug because the basic step of 1-2-3-kick was done with partners progressing away from each other. There were few popular steps to the dance and by the end of the year it was outdated. There were also a few short-lived novelty dances during 1941. A V for Victory, which was an ordinary dance number ending with couples scrambling to form a V on the floor . . . a Thumbs Up group dance, with couples in open position, following a leader who would frequently call for right or left thumbs up. There was also a Double-Partner waltz, supposedly danced in groups of three-one man and two girls. This formation was based on the premise that fewer men partners would be available during wartime. But the dance lived almost solely in newspaper and magazine pictures rather than on actual dance floors.

During 1942 the public became conscious of their social debt toward men in uniform. U.S.O. canteens were set up near every camp and naval station. There were officers' clubs, too, and the main social events for evening entertainment were the dances. Participation dances were naturally popular because they acted as "ice-breakers." Also when there were an unequal number of girls and men, the participation dances were amusing to the left-out

onlookers. The polka was still used as a novelty, and two new numbers became very popular—the Strip Polka and the Pennsylvania Polka. There was a short life, too, for a couple-dance done to "Praise the Lord and Pass the Ammunition." By 1942 the conga was used only as a participation stunt at parties. The samba, more difficult, was becoming better known and in 1943 it was displayed in a Walt Disney movie which had world-wide release.

U.S. soldiers had carried jitterbug dancing all over the world, and in Nov. 1943 *Life* magazine devoted the front cover and nine whole pages to this dance. It was hailed as "the true national folk dance of America." From about 1943 on jitterbug became sufficiently standardized for popularization among all ages. Whereas older people did not adopt the wild, acrobatic gyrations, still they jittered. The music demanded a definite jog or hop; it was impossible to dance a conventional fox trot to jive music.

The one dance that retained its popularity throughout the decade was the waltz. Each year there were at least a few new waltz tunes which become well known, and the old favorites continued to be played. Youngsters knew "Three O'Clock in the Morning" as well as their parents. It was only natural that the waltz should keep its place, as the basic waltz step was the foundation of the rumba, the samba and of the majority of fox trot steps. (A. Mu.)

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Danish Literature

See SCANDINAVIAN LITERATURE.

Danube River

See Canals and Inland Waterways.

Danzig

This formerly Prussian port on the Baltic sea at the mouth of the Vistula river was constituted with some surrounding communities by the treaty of Versailles in 1919 as a free city under the protection of the League of Nations, to give Poland the necessary séa outlet promised in Woodrow Wilson's fourteen points. The territory had an area of 730 sq.mi. and a population (1939), predominantly German, of 410,000, of whom 291,000 lived in the city itself.

It was the controversy over Danzig and the "Polish Corridor" which became the immediate cause of World War II. After 1933 the German National Socialist party in Danzig under the leadership of Albert Forster tried to coordinate Danzig policy and life with the system introduced in that year in Germany. By May 1938 the National Socialist party was in control of Danzig. By the end of 1938 Danzig was "gleichgeschaltet." In March 1939 Chancellor Hitler demanded the incorporation of Danzig into the German reich, in spite of his ten years' treaty of friendship with Poland signed in 1934. With the outbreak of World War II in Sept. 1939 the city was annexed by Germany.

As a result of the German defeat in World War II the city was incorporated into Poland in 1945. Prior to the war the Poles had built a new harbour at Gdynia, 12 miles

to the northwest, on Polish territory. By 1939, the new port had grown into a modern city of 120,000 population. As a result of the war, much of the old city of Danzig with its historic buildings was destroyed while the harbour remained intact. In Gdynia the harbour was destroyed while the city was largely spared.

Under the new Polish administration Danzig, called in Polish Gdansk, was to be enlarged as a great harbour which would also embrace Gdynia and Zoppot (Copot), a fashionable sea-side resort between the two ports. In 1945 practically all removable property of commercial and industrial value was removed from Danzig to the U.S.S.R. The character of the population was undergoing a rapid shift in 1946 with Poles replacing the Germans.

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D.A.R. (Daughters of the American Revolution) See Societies and Associations.

Dardanelles

See TURKEY.

D'Argenlieu, Georges Thierry

), French naval officer and D'Argenlieu (1889statesman, was born in Brest, Aug. 8, 1889, attended the Ecole Navale, served in the Morocco campaign, 1912-14, and in the submarine service during World War I, reaching the rank of lieutenant commander. He resigned in 1920 and entered the Order of Discalced Carmelites. In 1939 he was made provincial of the order over all France. Mobilized in that year, he was named to the general staff of the Cherbourg arsenal. He escaped from a convoy taking him to Germany as prisoner and joined Gen. Charles de Gaulle, being appointed chaplain to the naval forces. Recalled to active service as captain, he headed the mission to Dakar in 1940 and, although wounded, directed the successful withdrawal of the party in a small boat under machine-gun fire. He took part in the seizure of Libreville and Port Gentil, and in 1941 became a member of the Council of Defense of the Empire. On July 9 he became high commissioner for the Pacific and far east. Promoted to rear admiral, he commanded French naval forces in Britain and on March 24, 1945, was named vicepresident of the Supreme Naval council and inspector general. He was a delegate to the United Nations conference in San Francisco and in August was named governor general of Indo-China. On Nov. 27, 1946, Annamese forces revolted; D'Argenlieu was ordered to suppress the outbreak.

Darlan, Jean Louis Xavier François

Darlan (1881–1942), French naval officer and statesman, was born Aug. 7, 1881, at Nerac. He entered the navy in 1899 and during World War I commanded naval guns on the western front and also served in the Balkans. He became a captain in July 1918 and advanced through grades to vice-admiral, commanding French naval forces, 1939–40. In June 1940 he was named navy minister in the Pétain government, and in Feb. 1941 vice-premier, holding at one time six portfolios, but relinquishing all

but defense when Pierre Laval returned to Vichy's favour. Darlan instituted many fascist laws and was considered an arch-collaborator, but in 1942 he entered into negotiations with the U.S. and arranged to be in Algiers when Allied forces landed Nov. 8. He was "captured," signed an armistice and became governor of North Africa Nov. 13 with Gen. Henri Giraud as military leader. Because of Darlan's collaborationist and anti-British record, there was much criticism, of which Gen. Dwight Eisenhower bore the brunt. Darlan was assassinated by Fernand Bonnier de la Chapelle, a De Gaullist, Dec. 24, 1942. The slayer was executed, but an annulment in 1945 cleared his record.

Dates

See FRUIT.

Daughters of the American Revolution

See Societies and Associations.

Davies, Joseph Edward

Davies (1876—), U.S. lawyer and diplomat, was born Nov. 29, 1876, in Watertown, Wis. After receiving his law degree from the University of Wisconsin in 1901 he was admitted to the Wisconsin bar and practised law until 1913. He was chairman of the Federal Trade commission (1915–16).

In 1936 Pres. Roosevelt named Davies as U.S. ambassador to the soviet union. Although a businessman and capitalist, Davies was popular with the Russians and was largely responsible for the good relations that subsequently developed between the U.S. and the soviet union. He left Moscow in 1938 to become ambassador to Belgium and Luxembourg. Recalled to Washington, D.C., in Jan. 1940, he served as a special assistant to Secretary of State Cordell Hull in charge of war emergency problems and policies. In May 1943 he carried a personal message from Pres. Roosevelt to Premier Stalin and was closeted with the soviet leader for six hours. In the light of subsequent events it was surmised that Davies at this conference had laid the groundwork for the Moscow and Tehran conferences held later that year. He was the author of Mission to Moscow (1941), an inside story of Russia later made into a motion picture. Shortly after the close of the European war, Davies arrived in London on May 27, 1945, as Pres. Truman's special envoy to Prime Minister Churchill to discuss "matters of common interest." As Harry Hopkins left for Moscow at the same time it was later understood that the two envoys were arranging for the subsequent Potsdam meeting. Davies attended the Potsdam conference as special adviser to Pres. Truman. On April 1, 1946, Davies was awarded the medal of merit by Secretary of State Byrnes for his diplomatic services.

Davis, Chester Charles

Davis (1887—), U.S. government official, was born Nov. 17, 1887, near Linden, Dallas Co., Iowa. He was graduated from Grinnell college in 1911 and subsequently became a newspaperman in South Dakota and Montana. He served as commissioner of agriculture and labour in Montana, 1921–25, then was associated with farm organizations and the processing business. In 1933 he became first head of the Agricultural Adjustment administration. In 1936 he was named to the board of governors of the federal reserve banks and later became president of the Federal Reserve Bank of St. Louis. He also served with the Export-Import bank and Commodity Credit corpora-

DAVIS * DEAFNESS

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tion, and was federal food administrator (1943). Later he was on the War Production board civilian policy committee (1944) and advisory board of the Office of War Mobilization and Reconversion and on March 1, 1946, became chairman of the organizing committee of the Famine Emergency committee. In June 1946 he reported that a quota of 6,000,000 tons of wheat to be shipped to famine areas had been met.

In August he proposed to raise food production by supplying capital, machinery and "know-how" to China, India and South America.

Davis, Elmer Holmes

), U.S. news commentator and gov-Davis (1890ernment official, was born Jan. 13, 1890, in Aurora, Ind. A graduate of Franklin college (Franklin, Ind.), he was a Rhodes scholar at Oxford university, where he completed his studies in 1912. Reporter, editorial writer and author of more than a dozen books, he became, in 1939, one of radio's topflight news analysts. Pres. Roosevelt appointed him on June 13, 1942, as director of the newly created Office of War Information, which fused into a single agency all of the government's information services.

Davis' task, the co-ordination of the government's war publicity and propaganda, was not without its political difficulties. He engaged in a long struggle over the control of legitimate news with the war and navy departments and finally won the right in 1944 to share with the military the power to make decisions on release of war news. Prior to that time he was the target of sharp attacks by U.S. publishers whose complaint was that British journalists frequently released important news, such as the Cairo and Tehran decisions, before release of these items was authorized for U.S. newspapers. Davis later protested to the British information services against premature publication and breaking of news release dates. He also had internal difficulties within the OWI and on several occasions had to take up his case before Pres. Roosevelt to obtain authority as sole administrator of the agency. On Aug. 31, 1945, Pres. Truman abolished the OWI, transferring its functions to the state department. Davis' resignation was announced Sept. 12 and two months later he returned to the air as a news commentator.

Davis, Norman Hezekiah

Davis (1878-1944), U.S. banker, diplomat and Red Cross official, was born Aug. 9, 1878, in Bedford county, Tenn. In the early 1900s, Davis made a fortune in Cuban finance and sugar and headed the vast Trust Company of Cuba, serving as president of the firm until the entry of the U.S. in World War I. He was foreign loans adviser to the U.S. treasury, 1917, a member of the Armistice commission and of the Supreme Economic council, 1919. He also was financial adviser to President Wilson, serving as assistant secretary of the treasury, 1919-20, and undersecretary of state, 1920-21. Davis, who held many diplomatic posts, became a "roving" envoy for the Roosevelt administration; he participated in the World Economic conference at London, was chief of the U.S. naval delegation to the Five Power naval conference in London (1935) and was appointed by President Roosevelt to head the American Red Cross in 1938. He died July 2, 1944, in Hot Springs, Va.

Davis Cup See TENNIS.

D-day

See WORLD WAR II.

DDT (dichloro-diphenyl-trichloroethane)

See CHEMISTRY; ENTOMOLOGY; MEDICINE; MILITARY MEDICINE; PUBLIC HEALTH ENGINEERING.

De (in personal names)

See under proper names, i.e., Gaulle, Charles de.

Deafness

Complete deafness occurs rarely. A person unable to hear sounds shouted loudly into his ears has a total loss of usable hearing for speech. Practically speaking, this handicap is tantamount to being deaf. A deafened or hard-ofhearing individual has an impairment in hearing embracing all degrees of hearing loss from slight to severe or to just short of total deafness.

Aside from those born deaf or hard-of-hearing, in childhood or adolescence defective hearing is caused largely by measles, chicken pox, mumps, whooping cough, scarlet fever, infected tonsils and adenoids. In adulthood, added to the aforementioned conditions, are mainly influenza, repeated colds, occupational diseases, head trauma, Meniere's disease, drug toxaemias, meningitis, tumours of the nerve, syphilis, tuberculosis, otosclerosis and senile changes.

Drugs such as sulfonamides and penicillin assisted in alleviating hard-of-hearing caused by meningitis, scarlet fever and similar infections. In one survey of 1,000 cases of otosclerosis, 50% began between the 16th and 30th year of age, and 14% in those younger than 16.

If fixed changes occur in hearing before adulthood, there is not much that can be done to improve the condition of hearing.

The Committee on Conservation of Hearing of the American Academy of Ophthalmology and Otolaryngology stated its belief that parents fail to realize the importance of symptoms in a child such as earaches, infected adenoids and tonsils and discharging ears. These symptoms are signs of future impairment of hearing, although the disability may not show up for many years to come. A physician or ear specialist should be consulted immediately in order to prevent further damage to the organ of hearing.

In 1946, the Volta bureau, Washington, D.C., estimated 95,000 persons deaf enough to require specialized instruction in schools for the deaf. In the same year, the number of hard-of-hearing individuals in the United States was estimated to be 10,000,000 to 13,000,000. This round number included all shades of hard-of-hearing from slight to extreme. Of these, possibly 3,000,000 were seriously handicapped and should have used hearing aids or studied and employed lip reading.

Probably no more than 600,000 actually used hearing aids and lip reading.

The reasons why a larger number of deafened people did not use hearing aids more remained controversial. The most important reason seemed to be a matter of pride; next the cost, both the original expense and the upkeep, and finally, a delay awaiting better technical development in the instrument. When horns, ear trumpets, and speaking tubes were the only aids available 50 years before, they were regarded as a symbol of old age, and this impression apparently was carried over to the modern electrical hearing aid. In 1946 more young and middle-aged persons were wearing aids, and this stigma was passing away. Indeed,

the modern compact efficient instruments were actually less conspicuous than eyeglasses, especially when worn by women, since they could hide the devices under their wearing apparel and cover the earpiece with their hair.

Because of the community of interest existing between persons with similar handicaps, the social aspect was one important factor in the growth of the American Hearing society (formerly the American Society for the Hard-of-Hearing), Washington, D.C. This society and its 118 components in other cities were organized to furnish information on hearing aids and make arrangements for instruction in lip reading and other services in aural rehabilitation.

Hard-of-hearing individuals having difficulty in understanding conversation at a distance of five feet or less in relatively quiet places such as the office or home may be helped by wearing a hearing aid. Many authorities agreed that an individual with an average hearing loss of 35 decibels or more in the better ear at 512, 1,024 and 2,048 cycles per second (the speech range) usually experiences sufficient difficulty understanding speech to make advisable the use of an instrument.

For many years, technical progress in the hearing aid field followed telephone research, and hearing aids were essentially miniature telephones. Later, as the development progressed on the electronic tube which greatly magnifies sound, auditory research followed the electronic industry and the sets became virtually small public address systems.

The modern hearing aid consists of a microphone, amplifier, receiver and batteries. Complete, the majority of hearing aids weigh approximately 16 to 18 oz. including A and B batteries. Most of the sets come in three parts—receiver, battery pack and microphone-amplifier case, all three of which are connected by wires. If air conduction, the receiver is attached to a moulded earpiece; if bone conduction, the receiver is pressed against the mastoid by a spring band which fits over the head. Another type of hearing aid consisting of two visible parts only gained considerable popularity during the decade. The batteries are encased in the same unit with the amplifier and microphone. The receiver is connected to the case with one cord. This type of hearing aid with miniature batteries weighs about 10 oz.

When selecting a hearing aid, the deafened person is advised to have a complete otological examination by an otologist (ear doctor). Since modern hearing aids do not function at their best efficiency without a moulded earpiece, the first thing to do is to have a personalized earpiece made. This can be accomplished by consulting an otologist. If the physician does not wish to do this work, he will refer the patient to a qualified person.

Routine otological examinations of hard-of-hearing persons should include audiometric tests and will usually indicate to the otologist whether the patient will be benefited sufficiently to warrant the expense of purchasing an aid. Furthermore, it is important that the otologist determine whether an air conduction or a bone conduction instrument will give the better result.

The cost of hearing aids in 1946 ranged from \$40 to \$190 approximately. The operating expense of a hearing aid depended largely on the number of hours the aid was in use. Roughly estimating, the battery upkeep was \$3 to \$4 per month.

Most of the hearing aids were sold by hearing aid salesmen in 1946. However, hearing clinics were being established in the larger cities, and information regarding these clinics might be obtained from the local medical society.

In many cities, local chapters of the hearing societies had hearing aid bureaus in which an opportunity was given the hard-of-hearing person to try several makes of reliable hearing aids and to select the instrument which seemed most satisfactory to him. These services became popular because the hard-of-hearing individual was able to make a selection and compare one hearing aid with another without being influenced by a salesman.

Hearing clinics or centres had been established in schools of medicine at universities. In these centres, complete service for selecting and fitting a hearing aid was made available. The deafened person received an otological examination by a physician, an opportunity to try several hearing aids under normal conditions, a prescription for a hearing aid, and auricular training.

During World War II, U.S. army and navy rehabilitation centres introduced elaborate testing and fitting methods. Specialists did not agree on the precise value of these methods for selecting an instrument. Hearing aids could not be fitted by any method comparable with fitting of eyeglasses. Many deafened individuals were totally satisfied with a hearing aid selected over the counter by themselves. In difficult cases, there was apparently a definite advantage in employing the fitting procedures. One of the important contributions of the war period regarding rehabilitation of hearing was that a person required instruction on how to use the instrument. Specialists observed that lip reading is an essential factor of the training and instruction. Lip reading and a hearing aid complement each other, and a deafened person having a knowledge of the art of lip reading can understand speech better.

Even in clinics where hearing aids are carefully selected, patients should be instructed on what to expect to hear with a hearing aid. Investigators found that about 75% need formal drill for speech discrimination; approximately 50% need training for sound localization; and practically all need practice hearing against different levels of background noise. In groups where speech is rapid and shifts from person to person, specialized training is advised. One complaint levelled against hearing aids in general is that so many people who purchase them often put the instrument in the bureau drawer after a trial of a few weeks. Auricular training is offered to teach the hard-ofhearing to utilize every fragment of his residual hearing. Hearing a sound is one thing, but interpreting or understanding what that sound means is the purpose of auricular training. It is the art of making sound meaningful to the hard-of-hearing.

Research was done in the field of surgery for the amelioration of the hard-of-hearing during the decade. The fenestration or window operation was more widely accepted. This operation was more successful in the cases of deafness caused by some form of blocking in the ear, that is, when the nerve was not impaired. A fenestration operation supplies a substitute passage through which sound vibrations may reach the inner ear and bypass the injured and diseased part. This operation provided one hope of rehabilitating the hard of hearing by surgery and medicine. The operation does not restore the hearing to full normal volume but is capable in some cases of bringing it up to a useful level. The patients should be selected carefully because in some instances, hearing is made worse rather than better.

At the beginning of the decade, the (carbon) telephone type of hearing aid was used almost exclusively, and the vacuum tube (electronic) type was hardly known except

as a large, lunch boxlike contraption which the deafened person carried around by hand. The hearing aid bureaus, clinics and centres were practically unknown. Fenestration operations were considered impractical.

In the ensuing ten years, the vacuum tube hearing aid was greatly improved, while the volume and weight was reduced many fold. Batteries were greatly diminished in size and in weight. The new mercury-type of hearing aid battery was being experimented with, in expectation that the instruments might be made still smaller. The profession believed that a wearer of a hearing aid must have instruction to assist the individual in adjusting himself to the use of his instrument, both operationally and psychologically.

Industrial organizations were being urged to analyze their job opportunities and to consider the deafened for employment. Some manufacturing organizations had found that deafened persons, with hearing aids, might be qualified to hold many important positions requiring skill, application and judgment. A list of accepted hearing aids could be obtained from the Council on Physical Medicine of the American Medical association. A list of requirements on which the acceptance of these hearing aids is based also could be obtained from the office of the council upon request. (See also Ear, Nose and Throat, Diseases of.)

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Death Duties

See TAXATION.

Deaths (of prominent persons, 1937-46) See Obituaries, 1937-46.

Death Statistics

Registration systems for recording deaths have been developed most fully in the English-speaking countries and in the countries of western Europe. To eliminate the effect of variations in numbers of population in comparisons of death statistics among countries, it is usual to compute death rates per 1,000 of population. For this purpose the annual deaths of a country are divided by its population for the same year. For example, 1,411,338 deaths were recorded in the United States during 1944, and the estimated midyear population, exclusive of the armed forces overseas, was 132,552,000; the death rate was therefore 10.6 per 1,000 of population.

International Comparisons.—For the few countries whose civilian populations were not directly affected by the ravages of World War II, death rates remained either at a satisfactory level or showed some evidence of improvement in the decade beginning with 1937. In that year, according to the data in Table I, the United States had a death rate of 11.3 per 1,000; this dropped to a minimum of 10.4 in 1942, the first full year that country spent at war. The rate for 1945 was only 10.6; this figure excluded the armed forces overseas. The death rate for Canada remained at a level of about 10 per 1,000 during the period of survey. In its prewar years from 1937 to 1939, the death rate for England and Wales was about 12 per 1,000. However, the next year, 1940, witnessed the German air blitz against the civilian population of England and

1937 1938 1939 1940 1941 1942 1943 1944 Country North America United States . Canada . . Mexico . . South America Argentina Chile . . 12.3 24.5 17.3 10.2 11.2 23.3 17.6 9.1 11.2 21.6 15.1 9.6 17.2 24.0 15.3 10.4 Colombia -Uruguay . . Venezuela . 16.0 Europe Austria... Belgium ... 14.6 14.7 13.5 12.5 12.8 12.7 13.4 13.9 13.7 1 10.3 9.6 9.6 14.6 14.1 14.7 12.9 11.6 12.1 19.7 15.0 13.3 Bulgaria . . . Czechoslovakia 13.4 13.4 13.0 1 13.4 1 10.1 10.4 14.2 14.2 12.1 14.3 14.8 20.0 15.3 18.2 12.3 12.7 12.8 10.3 13.6 11.6 13.1 Denmark. . . Eire. England and Wales Finland France. 17.4 Germany. . 14.4 14.6 13.6 9.9 10.7 13.2 15.2 Hungary Ireland, Northern 13.9 8.5 10.0 13.8 15.5 19.2 12.6 16.4 Italy...... Netherlands... 14.2 8.8 10.4 14.0 16.0 19.3 13.9 17.9 12.0 Norway . . Poland . . . 10.2 16.1 19.5 13.3 14.7 9.9 † 17.4 19.1 14.7 18.7 † 15.3 18.1 13.3 13.2 15.5 15.6 19.2 14.9 16.5 Portugal . . Rumania . . 14.8 18.6 12.9 18.1 12.9 Scotland . . Spain . . Sweden . 11.5 11.5 Switzerland. 12.1 Yugoslavia . Asia Cevion Japan. . Palestine. Other Countries
Australia... 9.9 26.0 9.7 26.5 10.0 25.9 10.5 28.6 9.6 26.4 9.7 9.2 9.2 9.8 10.6 10.0 9.9 9.1 10.1 9.5 9.4 9.5 9.4 9.7 *Excludes armed forces overseas. tNot available. 1Bohemia-Moravia only.

Wales; the resulting deaths contributed, in good part, to the rise in the death rate for that year to 14.3 per 1,000. Some effect of this form of warfare was also reflected in Great Britain's death rate of 12.9 in 1941, but, with the virtual cessation of aerial bombings of British cities in subsequent years, the death rate fell to the immediate prewar level of about 12 per 1,000. Australia and New Zealand, with death rates of about 10 per 1,000, experienced gradual increases in their rates from 1937 to 1942; most of this rise was generally attributed to the effect of the increasing proportion of aged persons in these countries. The death rate of white population in the Union of South Africa was less than 10 per 1,000 from 1938 to 1943.

Many of the European countries occupied by Germany experienced sharp rises in their death rates in 1940, with the rates for subsequent war years still above the average for the prewar period 1937-39. For example, France had an average death rate of 15.2 per 1,000 during 1937-39; this rose to 18.2 in 1940, but for subsequent years to 1943 declines were reported. However, the rate for France in 1944 jumped to 19.3 per 1,000. The record for Belgium was very much like that for France, but with rates at lower levels. Death rates for the Netherlands rose from a 1937-39 average of 8.6 per 1,000 to a 1940-43 average of almost 10 per 1,000. Reports from Norway showed death rates for the war period not far different from the immediate prewar average. Some improvement was actually indicated in the record for Denmark until 1943. These data from the overrun countries during the period of their occupancy were subject to question, in view of the character of their governments.

Of the axis countries the reported death rate for Germany rose from an average of 11.7 per 1,000 in 1937-38

DEATH STATISTICS

to a peak of 12.7 in 1940; some improvement was indicated for the next three years, but not to the prewar level. The record for Italy showed decreases in death rates from 1937 to 1939, but for each subsequent year through 1943 there was a rise in the rate. Japan's rate for 1941, the year hostilities began against the United States, was 15.4 per 1,000, much lower than for any preceding year after 1937.

Among the neutral countries, Sweden was favoured with a gradual downward trend in its death rates from 1937 to 1942, while for Eire the rates remained practically level. Of the Latin-American countries for which data were available, Mexico, Chile and Venezuela, with high death rates, showed marked improvement after 1937, while Argentina and Uruguay, with low rates, showed slower improvements.

War Deaths.—The tremendous toll of human lives taken by World War II will probably never be known with any satisfactory degree of accuracy. In addition to the lives lost among the armed forces of the warring nations, millions of noncombatants died of disease, starvation and wanton murder. Civilian populations were subjected, furthermore, to death by large-scale bombing and by the forces of atomic energy released for the first time in history.

Up to the end of World War II the British empire had lost 353,652 men in the armed forces killed in action. Of this number, the United Kingdom accounted for 244,723; Canada 37,476; Australia 23,365; New Zealand 10,033; South Africa 6,840; India 24,338; and the colonies 6,877. There were 30,189 merchant seamen killed. In addition, up to the end of the war in Europe, 60,585 civilians were killed, of whom 26,920 were men, 25,392 women, 7,736 children and 537 unidentified.

The armed forces of the United States lost 396,637 by death during World War II; this included personnel killed in action, deaths from wounds or injuries, deaths from nonbattle causes and the missing. Of this total, 308,978 were in the army (according to a report dated June 27, 1946), and 87,659 in the navy, marines and coast guard (as of June 1, 1946). The biennial report of the chief of staff of the United States army, dated Sept. 1, 1945, stated that the war in Europe resulted in 772,626 battle casualties, of whom 160,045 were dead, while the Pacific area had 170,596 casualties and 41,322 dead.

The efficacy of modern health practices in the control of disease among troops was shown by the following: the annual death rate from disease among the men in the Mexican War was 10%; for the Civil War (Union troops), 7.2%; Spanish War and Philippine Insurrection, 1.6%; World War I, 1.3%; World War II, 0.6%.

The United Nations information office gathered statements regarding war deaths from a number of sources; many of these reports were apparently only broad estimates. Thus, a Red army general in Berlin stated that soviet war deaths were between 12,000,000 and 15,000,000—half civilians and half soldiers. An official statement listed 8,219 as the number killed in the brief fighting against Japan.

According to a French report, that country had about 167,000 of its armed personnel killed in action. Civilians executed by the Germans were estimated at about 100,000 and deaths among deportees to German camps at about 175,000. There were, in addition, many thousands of civilians killed by air action and also during the brief battle of France in 1940.

Belgium war dead included 7,760 military personnel and 20,271 civilians. The Netherlands lost 6,238 dead in its armed forces, and about 25,000 killed among its civilian

underground workers. Norway was estimated to have lost about 10,000 lives during the war; Denmark, about 3,000.

Poland was estimated to have lost 5,000,000 lives, of whom about 3,000,000 were Jews in concentration camps. About 265,800 were killed or wounded among its armed forces. Civilian and military deaths in Yugoslavia were estimated at about 1,685,000. Greece lost about 415,300.

An official report for China stated that deaths among military personnel during eight years of war against the Japanese numbered 1,310,224. There were undoubtedly many times this number of civilian lives lost by disease, starvation and murder.

German military deaths during World War II were estimated at 3,250,000 (Statistical Bulletin of the Metropolitan Life Insurance company, Jan. 1946). The medical branch of the U.S. strategic bombing survey estimated that Allied bombing killed about 500,000 civilians in Germany, including imported labour.

Military deaths among Italians, while on the side of the axis, were reported as about 60,000, but this was very likely an understatement. Italian army dead while on the side of the Allies numbered 17,494; navy deaths came to 3,584.

An official Japanese statement, dated Sept. 5, 1945, reported about 350,000 deaths in the army of that country and 158,795 deaths in the navy. Allied air attacks on Japan resulted in 241,309 deaths and 313,041 wounded among the civilians. The atomic bomb released on Aug. 6, 1945, over Hiroshima caused 49,221 civilian deaths and wounded 58,839, while the atomic bomb over Nagasaki on Aug. 9, 1945, killed 21,501 civilians and wounded 51,580.

Military deaths for Rumania may have been about 100,000; Hungary, about 75,000; and Finland, about 50,000 (Statistical Bulletin, Jan. 1946).

Death Rates According to Age, Race and Sex.-Death rates specific for age, race or sex may be computed by dividing deaths within a defined category by the corresponding population. Death rates specific for age during the decade were generally high in the first year of life, decreasing to a minimum about age ten and thereafter rising with advance in age. Thus, for the population in the United States during 1944, excluding the armed forces overseas, the data in Table II show that the death rate was 43.3 per 1,000 population under one year of age. The death rate fell to a low of 0.9 per 1,000 at ages 5 to 14 years, then rose to 9.8 at ages 45 to 54 and reached a level of 119.6 at ages 75 and over. Death rates were usually lower for females than for males, and, in the United States, lower for white persons than for Negroes. For example, in 1944 the death rates per 1,000 were 12.3 for white males, 8.8 for white females, 13.9 for Negro males and 11.0 for Negro females.

Table II.—Death Rates per 1,000 Population of Specified Ages and per 1,000 Total Persons of Specified Race and Sex, United States, 1937 to 1944*

•				
	1937 1938	1939 1940	1941 1942	1943 1944
Total persons				
Under 1 year	61.3 58.0	53.7 54.9	52.3 48.0	43.0 43.3
1-4		3.2 29	2.8 2.4	2.6 2.3
5-14		1.1 1.0	1.0 .9	1.0 .9
15-24		2.1 2.0	2.0 1.9	2.0 2.0
25-34		3.2 3.1	2.9 2.8	2.8 2.7
35-44		5.3 5.2	5.0 4.9	4.9 4.7
45-54		10.7 10.6	10.3 10.1	10.3 9.8
55-64		22.1 22.3	21.4 21.0	21.5 20.6
65-74		47.2 480	46.6 45.6	47.4 45.5
75 and over		128.3 129.1		126.4 119.6
All ages				
White males	. 12.0 11.3	11.3 11.6	11.4 11.5	12,2 12,3
White females			8.9 8.7	
Negro males			14.8 140	
Negro females			12.2 11.4	11.6 11.0
*Death rates for 1942	o 1944 based	upon populati	on excluding n	nembers in the

armed forces overseas.

All ages and each race and sex category shared in the general improvement in death rates from 1937 to 1944. The improvement was relatively greatest among young children and smallest at the older ages of life. Thus, at ages 1 to 4 years, the rate in 1944 was just over half that in 1937; at ages 5 to 14, the decrease was by about one-third, although this age group showed little improvement after 1940. The next age group, likewise, showed little change after 1940, a situation attributable, in large part, to the high mortality from accidents among men of these ages in the armed forces at home. For each of the age groups from 25 to 64 years shown in Table II, the year 1944 had the lowest death rates since 1937; at ages 75 and over, only one year, 1942, had a better record than 1944.

Negroes made a relatively better showing than white persons in improvement of death rates; for both males and females in this category the year 1944 was the best on record. For most of the period under survey, white females showed only small changes in death rates, although the tendency was downward. White males had higher death rates in 1943 and 1944 than in 1937. The high level for these two years arose largely from the great number of fatal accidents among men in the armed forces, as previously mentioned. A pneumonia epidemic prevalent in 1943 was another factor in the rise in the death rate for both sexes for that year.

Rates According to Cause of Death.-The more important causes of death according to age, and their death rates per 100,000 population of the same ages in the United States during 1944 were: ages 1 to 4, all causes 231, pneumonia and influenza 45, accidents (excluding motor vehicle) 39, diarrhoea and enteritis 15, congenital malformations 12, motor vehicle accidents 11; ages 5 to 14, all causes 93, accidents (excluding motor vehicle) 21, motor vehicle accidents 10, pneumonia and influenza 7, diseases of the heart 6, appendicitis 4; ages 15 to 24, all causes 201, accidents (excluding motor vehicle) 48, tuberculosis 34, motor vehicle accidents 21, diseases of the heart 13, pneumonia and influenza 9; ages 25 to 44, all causes 366, diseases of the heart 59, tuberculosis 51, cancer 41, accidents (excluding motor vehicle) 32, pneumonia and influenza 18; ages 45 to 64, all causes 1,435, diseases of the heart 471, cancer 253, cerebral haemorrhage 127, nephritis 91, tuberculosis 64; ages 65 and over, all causes 6,781, diseases of the heart 2,622, cerebral haemorrhage 839, cancer 833, nephritis 580, pneumonia and influenza 350. (For causes of death in the first year of life, see INFANT MORTALITY.)

In the United States practically all infectious diseases showed improvements in death rates from 1937 to 1944 (see Table III). That this improvement should have continued through the war years 1942 to 1944 was all the more remarkable, inasmuch as during this period a large proportion of the civilian medical and nursing personnel was drawn into the armed forces; hospital facilities were overtaxed; there was a large movement of civilian population; unsanitary and crowded housing was built around newly developed war industries; and the rapid movement of great numbers of men to and from foreign areas provided new opportunities for the spread of disease.

There was a steady decrease in the death rate from typhoid fever; the rate in 1944, 0.4 per 100,000, was only about one-fifth of the rate in 1937. Of the principal communicable diseases of childhood scarlet fever maintained a level of only 0.3 per 100,000 since 1941, a level of about one-fifth that in 1937. By 1941 the death rate from diphtheria, 1.0 per 100,000, was only half that in 1937. In the

 Cause of Death
 1937
 1938
 1939
 1940
 1941
 1942
 1943
 1944

 Typhoid fever.
 2.1
 1.8
 1.5
 1.0
 .8
 .5
 .5
 .4

 Measles
 1.2
 2.5
 .9
 .5
 1.7
 1.0
 1.0
 1.5

 Scarlet fever
 1.4
 .9
 .7
 .5
 .3
 .3
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*Deaths from puerperal causes per 1,000 live births. †Deaths under one year of age per 1,000 live births.

case of measles there were marked fluctuations in the death rate with no systematic improvement, but for whooping cough the rates tended downward. There were severe epidemic outbreaks of acute poliomyelitis (infantile paralysis) in 1937 and 1944; the death rate for both of these years reached 1.0 per 100,000, although it fell as low as 0.4 in two of the intervening years. Diarrhoea and enteritis, a condition most dangerous in the first two years of life, had a rapid decrease in its death rate, from 14.7 per 100,000 in 1937 to 8.8 in 1942, but the two succeeding years showed increases; this may, perhaps, have been a consequence of crowded housing and lack of adequate sanitary facilities during the war.

Of the respiratory conditions, influenza had a decrease in its death rate from 29.5 per 100,000 in 1937 to only 8.1 in 1942; the setback in the next two years reflected an outbreak of this disease which rose to epidemic proportions about the middle of Dec. 1943 and reached its peak during the first two weeks of Jan. 1944. The rapid advance in chemotherapy was undoubtedly the principal factor in the great improvement in the death rate from pneumonia after 1937. In that year, the death rate was 85.4 per 100,-000, but it fell rapidly to a low of 47.6 in 1942; the rise in 1943 again may have been associated with the outbreak of influenza that year. Contrary to all expectations the death rate from tuberculosis continued to improve through the war years, notwithstanding the unusually crowded living conditions of the population. In 1937, the death rate from tuberculosis was 53.8 per 100,000, while in 1944 it was only 41.3. Syphilis, another disease usually expected to show increased death rates during war, also fell to lower levels; each year from 1937 through 1944 showed an improvement over the preceding year.

During the period of survey, there were gradual increases in the reported death rates from cancer and from diabetes mellitus. These increases may have been more apparent than real, for they resulted partially from the fact that the proportion of aged in the population was increasing (these diseases are most common in old age) and also, in part, from better case finding. The death rate from cancer rose from 112.4 per 100,000 in 1937 to 129.1 in 1944; the corresponding rates for diabetes mellitus were 23.7 and 26.4.

A large part of the upward trend in the death rates from cerebral haemorrhage, diseases of the heart and arteriosclerosis may also have been due to the increasing proportion of aged in the population. The proportion of aged in the population within the United States increased rapidly during 1943 and 1944 as men in the armed forces were shipped overseas, with the result that diseases associated with advanced age assumed added importance in the total picture. The death rates per 100,000 population (excluding the armed forces overseas) from these conditions in 1937 and 1944 were, respectively: cerebral haemorrhage, 86.7, 93.7; diseases of the heart, 268.9, 315.4; arteriosclerosis, 17.1, 19.3. Death rates from nephritis (all forms) rose to a peak of 82.9 per 100,000 in 1989 but fell to 69.2 in 1944. In contrast to this picture for the cardiovascularrenal diseases based upon crude death rates, an analysis of the trend of the death rates for this group of diseases, according to age and sex in an insurance experience showed notable improvements in each specific category (Statistical Bulletin of the Metropolitan Life Insurance company, March 1946, p. 5). In commenting upon the favourable trend of mortality at the younger ages attention was drawn to the decreased incidence of childhood infections which frequently affect the heart. The same consideration also entered into the improvement in the death rate from the cardiovascular-renal conditions in early and middle adult life; a further factor at this stage of life, particularly among men, was the decrease in cases of syphilitic heart disease.

There was no change in the level of the death rates from ulcer of the stomach or duodenum, which remained at somewhat under 7 per 100,000. Death rates from appendicitis decreased steadily, so that the rate for 1944, 5.9 per 100,000, was just about half that for 1937. This improvement was attributed largely to the use of chemotherapy in cases of appendicitis complicated by peritonitis. Another important factor in the improvement was the educational campaign waged throughout the United States to warn against delay in obtaining medical attention and against the use of laxatives when there is abdominal pain.

The frequency of fatalities from accidents of all kinds dropped sharply from 1937 to 1938 and then remained at a level somewhat over 70 per 100,000 through 1944. However, in this total picture the death rate from motor vehicle accidents showed marked fluctuations up to 1941; with the restriction in the use of automobiles because of gas rationing, the death rate fell in 1942 and reached a low of about 18 per 100,000 in 1943 and 1944. After gas rationing was lifted in 1945 the death rate from motor vehicle accidents advanced rapidly. All forms of accidents, other than those in connection with motor vehicles, rose from 46.3 per 100,000 in 1941 to 53.5 in 1944; some of this rise could be attributed to occupational fatalities associated with the increased industrial activity during the war. Homicides in the United States dropped steadily from 1937 to 1944, from 7.6 to 4.9 per 100,000.

An indication of the trend of death rates according to cause through 1945 was made public by the Metropolitan

Life Insurance company. Improvements from 1944 to 1945 were noted in the case of measles, scarlet fever, influenza, pneumonia, tuberculosis, syphilis, diabetes, chronic heart disease, diarrhoea and enteritis, appendicitis, chronic nephritis and suicides. Causes of death showing higher rates in 1945 than in 1944 were: typhoid fever, whooping cough,

diphtheria, cancer, cerebral haemorrhage and accidents (all forms).

Maternal Mortality.-Maternal mortality is usually expressed in terms of annual deaths from puerperal causes per 1,000 live births. The decline in maternal mortality in the United States was particularly rapid after 1937, when the rate was 4.9 per 1,000 live births; this was reduced by more than half by 1944, when the rate was only 2.3 per 1,000 live births. Among white women, the maternal mortality rate was 1.9 per 1,000 live births, while among Negroes it was 5.0. In 1944, deaths during or after delivery accounted for 64.6% of the total of 6,369 puerperal deaths, deaths before delivery for 14.4%, ectopic gestation for 5.4%, and abortion for 15.6%. Of the puerperal deaths in the United States in 1944, septicaemia accounted for 35.7%, puerperal toxaemia for 25.2%, and haemorrhage for 18.5%. Most of the improvement in maternal mortality was through the reduced incidence of puerperal septicaemia, in which the increasing use of the sulfonamides was undoubtedly an important factor.

In point of age, maternal mortality was at a minimum among mothers 20 to 24 years of age. In 1944, the rates per 1,000 live births according to age of mother were: ages 10 to 14, 4.2; ages 15 to 19, 2.1; ages 20 to 24, 1.4; ages 25 to 29, 1.7; ages 30 to 34, 2.8; ages 35 to 39, 4.5; ages 40 to 44, 6.8; and ages 45 to 49, 9.0.

A study (Statistical Bulletin, Metropolitan Life Insurance Co., July 1945) showed that maternal mortality was lowest where hospital confinement was most frequent, namely, in the Pacific coast states. The improvements from 1940 to 1943 were most rapid in the southern and mountain states, which generally had the highest rates; these areas also had the smallest proportions of hospitalized births.

Mortality According to Marital Status.-From 1940 records for the general population of the United States, it was found that among males the unmarried had an excess mortality of 49%, widowers an excess of 108% and divorced an excess of 123%. (See Table IV.) Among females, the single had a mortality 10% greater than the married, widows 55% and divorced 57%. The advantage in mortality of married males over the unmarried was found in the case of each of the more important causes of death. Mortality among unmarried males, as compared with the married, was particularly high in the case of tuberculosis, syphilis, homicide, suicide and accidents. Whereas married males showed to best advantage as compared with the unmarried for each cause of death listed in Table IV, among females there were several causes for which spinsters made the best showing, namely, diabetes mellitus, cerebral haemorrhage, appendicitis, cirrhosis of the liver, nephritis and death by homicide. The incidence of death by homi-

Table IV.—Ratio of Mortality from Selected Causes for Single, Widowed, and Divorced Persons of Ages 20 to 74 Years, to Corresponding Mortality for Married Persons, United States, 1940

•		Males		Females			
Cause of Death	Single	Married Widowed Divorce	d Single	Married Widowed Divorced			
All causes Tuberculosis Syphilis Cancer Cancer Diabetes mellitus Cerebral haemorrhage Diseases of the heart Pneumonia and influenza Appendicitis Cirrhosis of the liver	1.49 2.63 2.14 1.22 1.08 1.23 1.34 1.82 1.01 1.81	1.00 2.08 2.23 1.00 4.30 3.30 1.00 3.54 4.05 1.00 1.48 1.62 1.00 1.36 1.54 1.00 1.67 1.93 1.00 2.49 2.40 1.00 1.37 1.29 1.00 2.26 3.39	1.10 1.68 1.06 1.18 .54 .95 1.16 1.39 .94	1.00 1.55 1.57 1.00 2.95 1.83 . 1.00 3.07 3.75 1.00 1.27 1.53 1.00 1.19 1.05 1.00 1.42 1.49 1.00 1.48 1.58 1.00 2.04 1.53 1.00 1.16 1.09 1.00 1.37 1.99			
Nephritis	1.25 1.66 1.36 1.81	1.00 1.89 1.67 1.00 2.98 3.92 1.00 3.89 3.30 1.00 2.69 3.34	.95 1.38 .87 1.34	1.00 1.60 1.35 1.00 1.63 3.61 1.00 3.85 3.64 1.00 2.10 2.60			

Source: U.S. Bureau of the Census, Vital Statistics—Special Reports, Vol. 23, No. 7, Nov. 1945.

cide, however, was particularly high among widows and divorcees as compared with married women. On the whole mortality from tuberculosis, syphilis and suicide was substantially greater among unmarried women than among the married.

The relatively high mortality from tuberculosis among single persons may have been indicative of the selective factor in marriage, since persons afflicted with the disease would usually hesitate to assume new responsibilities. Although the high mortality from tuberculosis among the widowed may appear to indicate the possibility that the disease was acquired from the spouse, the data on hand provided no positive evidence.

Social considerations accounted very largely for the high mortality from syphilis among the unmarried. This may also have been the case in regard to the high mortality from suicide and homicide among the unmarried.

The lower mortality of the married person is usually attributed to the selection of the healthier persons in marriage. In addition married men are likely to take better care of their health than the unmarried and also to receive better care when they are ill.

Mortality in Relation to Social Class.-An analysis of mortality records in England and Wales during 1930-32 (the Registrar-General's Decennial Supplement, England and Wales, 1931. Part IIa: Occupational Mortality, London, 1938) showed a definite gradation for males from low to high mortality rates in proceeding from the class consisting of the professional and economically better situated occupations to the class of labourers and other unskilled workers. The improvement in mortality from 1921-23, the date of the previous study, to 1930-32, was more rapid for the poorer class of occupations than for the better situated class; in other words the differences in mortality between the several occupational classes in 1930-32 were not as great as in 1921-23. When the married women in the 1930-32 study were classified according to the occupations of their husbands, the mortality of the wives also showed a marked progression from low for the most favoured class to high for the poorest class. This suggested that for most occupations, mortality was not influenced so much by the occupational risks involved as it was by the social environment of the workers. The same kind of variation in mortality from low to high was found when children under two years of age were classed according to the occupation of their fathers.

Expectation of Life.—The expectation of life at birth, or the average length of life, is the average number of years of life for newly born babies, assuming that they will experience, throughout their lifetime, the age-specific death rates observed within a specified calendar year or period. The expectation of life at any age is the average number of years remaining after that age, assuming the age-specific death rates remain constant as of the period for which the figure is computed.

Among the countries with the best records were New Zealand, where, in 1934–38, males had an average length of life of 65.46 years, and females of 68.45 years; the Netherlands in 1931–40, with 65.7 years for males and 67.2 years for females; and Sweden, in 1936–40, with 64.30 years for males and 66.92 years for females. At the other extreme was India (1931), with 26.91 years for males and 26.56 years for females. (See Table V.)

The records for the average length of life in the United States (white population), England and Wales, and Canada were not much different. In 1937, the figure for males in

Table V.—Expectation of Life at Birth for Selected Countries in Specified Periods Country Males Females Country Period Males Females 1944 63.55 68.95
1943 63.65 68.61
1939-41 62.81 67.29
1930-39 60.62 64.52
1944 55.30 58.99
1943 54.65 57.97
1942 54.28 58.00
1939-41* 52.26 55.56
1930-39 50.06 52.62
1930-32 58.96 60.73
1932-34 63.48 67.14
1930-33 54.47 58.53
1928-32 56.02 59.79
1925-28 45.92 46.64
1929-32 51.92 55.18
1936-40 63.5 65.8
1940-42 59.0 61.0 United States White England and Wales Coloured Canada . . Australia . 1936-40 64.30 1933-37 60.7 Belgium Switzerland Bulgaria . . . Czechoslovakia Africa (whites) 1935-37 58.95 63.06 Denmark . . . Eire *Negroes only.

England and Wales was 60.18 years and that for females was 64.40 years. The corresponding figures for the United States, in 1930-39, were 60.62 and 64.52 years. In Canada, in 1940-42, the average length of life was 62.95 years for males and 66.29 years for females; these may be compared with corresponding figures of 62.81 years and 67.29 years for the United States in 1939-41.

The expectation of life in the United States in 1944 according to race and sex, and for every fifth age of life is shown in Table VI. White females had an expectation of life at birth of 68.95 years, and white males of 63.55 years, while among Negroes, the corresponding figures were 58.99 years and 55.30 years. At age 40, the expectation of life was: white males, 30.39 years; white females, 33.97 years; Negro males 26.26 years; Negro females, 28.92 years.

Table VI.—Expectation of Life at Specified Ages, by Colour and Sex, General Population in the United States, 1944

	Total	W	hite	Negro			
Age	Persons	Males	Females	Males	Females		
0	65.12	63.55	68.95	55.30	58.99		
1	66.80	65.23	70.23	58.14	61.40		
2	66.04	64.46	69.43	57.52	60.76		
3	65.18	63.59	68.55	56.70	59.95		
4	64.28	62.69	67.64	55.84	59.08		
5	63.36	61.76	66.71	54.94	58.18		
10	58.64	57.06	61.95	50.27	53.47		
15	53.89	52.35	57.14	45.65	48.79		
20	49.30	47.83	52.39	41.38	44.48		
25	44.87	43.58	47.71	37.46	40.43		
30	40.42	39.22	43.06	33.66	36.43		
35	35.97	34.76	38.47	29.87	32.57		
40	31.63	30.39	33.97	26.26	28.92		
45	27.44	26.18	29.56	22.90	25.47		
	23.45	22.23	25.30	19.92	22.28		
	19.71	18,57	21.24	17.38	19.51		
	16.24	15.24	17.41	14.96			
60					17.04		
65	13.09	12.27	13.91	12.69	14.93		
70	10.30	9.65	10.80	10.81	13.14		
75	7.85	7.35	8.08	9.13	11.41		
80	5.76	5.42	5.83	7.21	9.42		

According to life tables published by the United States bureau of the census, using 1939 mortality data, the average length of life was better in rural areas than in urban places; the north generally made the best showing and the south the poorest. (See also Accidents; Census Data, U.S.; Infant Mortality; Suicide Statistics.)

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(A. J. Lo.; M. Sp.)

Debts, National

The national debt of a country generally refers to the total financial obligations of the state arising out of the issuance of public securities. It does not include the debt of

all governmental units and agencies but only the obligations of the central government. The national debt usually indicates the extent to which the central government has resorted to borrowing over the years to make up the deficit between its outlays for government services and investment and its revenues from taxation and various minor sources. As the manner of keeping official accounts varies from country to country, however, there are many exceptions to this definition. On the one hand, agencies or corporations of the central government are sometimes set up outside the budget so that their debt does not appear in the national debt. On the other hand, obligations are sometimes assumed by the government and included in the official national debt statistics which did not originate in a borrowing operation. The U.S. adjusted service bonds issued to veterans were an example of this type of obligation included in the national debt total of the United States.

United States.—The decade 1937–46 was one of unusual significance in the history of the U.S. national debt. The earlier half of the decade witnessed a fundamental change in the economic philosophy of public debt management while the latter half of the period brought a tremendous expansion in the national debt through its use in financing the war effort.

It may be seen from Table I that the national debt first rose to sizable proportions during World War I, reaching a peak of \$25,482,000,000 in 1919. In the course of the eco-

Table I.—National Debt of the United States, 1913-46

JUNE 30	(Millions of dollars)	JUNE 30	(Millions of dollars)
1913	\$ 1,193 1930		\$ 16,185
1914			16,801
1915	1.191 1932		19,487
1916			22,539
1917			27.053
1918			28,701
1919			33,545
1920			36,427
1921			37,167
1922			40,445
1923			42,971
1924			48,961
1925			72,422
1926	19.643 1943		136,696
1927	18,510 1944		201,003
1928			258,682
1929			269,422
1727	10,751		

Source: Data from 1913-46 are from U.S. Treasury Department, Daily Treasury statement (revised).

nomic prosperity of the 1920s the debt was substantially reduced so that by 1930 it had fallen to \$16,185,000,000. With the onset of economic depression and the deflationary spiral after 1930, the national debt began to rise by fairly substantial amounts. There was an increase in the neighbourhood of \$3,000,000,000 in the fiscal years of 1932 and 1933. This rise resulted not from any overt policy decision but because government revenues were substantially reduced with the cumulative contraction of economic activity.

A new chapter in the history of the national debt began with the advent of the Roosevelt administration, which soon began to experiment with government expenditures for public works, relief, agricultural rehabilitation and other purposes as a means of combating economic depression. This idea became crystallized only after the course of time, particularly after the publication in 1935 of The General Theory of Employment, Interest and Money by Lord Keynes. The idea was developed that government expenditures designed to raise the level of economic activity should be financed by borrowing rather than by taxes. The reason was that although government expenditures financed in either way would have the same direct repercussions upon the economy, an increase in

taxes at a time of underemployment would, in most instances, act as a curtailment of private spending whereas an increase in the national debt would not exercise any drain on private purchasing power.

It was largely under the stimulus of the pump-priming idea that the U.S. national debt was increased so substantially from 1933-40. Over this period the debt almost doubled, rising to \$42,971,000,000 in 1940. The fiscal years 1936 and 1939 saw the largest debt increases of the period. In the earlier year the passage of a large Soldiers' Bonus act contributed substantially to the debt increase. In the latter year, however, the debt increase was caused entirely by the effort of the administration to reverse the 1937-38 recession. It constituted the first fully articulated experiment in using government expenditures and the management of the public debt to foster economic recovery.

During the recovery period, another innovation was introduced into the government debt structure. This was the creation of various government corporations operating outside the budget, whose obligations were not included in the national debt but were guaranteed by the federal government. The most important of these corporations were: the Federal Farm Mortgage corporation, the Commodity Credit corporation, the Home Owners Loan corporation and the Reconstruction Finance corporation. As can be seen in Table II the guaranteed obligations reached a peak in 1941 of \$6,371,000,000. In the course of the war, this guaranteed debt was gradually incorporated into the public debt.

The national debt entered a new phase with the inauguration of the rearmament program in the middle of 1940. New tax measures were instituted to increase government

"The Line Forms at the Right." Darling of the New York Herald Tribune visualized a seemingly endless stream of additions to the U.S. national debt after World War II



		•		Ju	ne 30			
ltem	1935	1937	1939	1941	1942	1943	1945	1946
Direct public debt, total	\$28,701 27,645	\$36,425 35,800	\$40,440 39,886	\$48,961 48,387	\$72,422 71,968	\$136,696 135,380	\$258,682 256,356	\$269,422 268,111
Public issues: Bonds, total U.S savings bonds All other Notes, total Treasury notes Tax and savings series Certificates of indebtedness Bills Special issues Noninterest-bearing debt Total direct and guaranteed debt	14,936 62 14,874 10,023 10,023 — 2,053 633 1,056 4,123 32,824	21,322 800 20,522 10,617 10,617 — 2,303 1,558 625 4,664 41,089	27,565 1,868 25,697 7,243 7,243 — 1,308 3,770 554 5,450 45,890	34,966 4,314 30,652 5,698 5,698 	48,775 10,188 38,587 9,704 6,689 3,015 3,096 2,508 7,885 4,569 76,991	79,421 21,256 58,165 16,663 9,168 7,495 16,561 11,864 10,871 1,316 4,100	152,734 45,586 107,148 33,633 23,497 10,136 34,136 17,041 18,812 2,326 433 259,115	168,964 49,035 119,929 24,972 18,261 6,711 34,804 17,039 22,332 1,311 476 269,898
Source: Treasury Bull. (Oct. 1944 and 1	946).							

revenues, but the scale of national defense expenditures was soon so large that a substantial increase in the national debt was inevitable. By mid-1941 the debt had risen to \$48.061.000,000.

With the transformation of the rearmament program to a total war effort after the Japanese attacked Pearl Harbor, there was a further tremendous increase in government expenditures that was to persist until victory was achieved in 1945. Large increases in taxes were achieved, but revenues were continuously far less than the government's expenditures. The result was an unprecedented increase in the national debt. In the three years from 1942, the increase in the national debt was more than \$50,000,000,000 a year, with the total reaching \$258,682,000,000 on June 30, 1945.

As military expenditures of the government were drastically reduced after the end of the war, the phase of tremendous debt expansion came to an end. There was a further increase in the debt in the transition year of 1946, but this was of considerably smaller proportions than the increases experienced during the war.

Several aspects of the treasury's debt policy during World War II deserve attention. Late in 1942, the treasury began the policy of raising the bulk of its financing in short war-loan drives. In the course of the war seven such drives were held, which yielded the bulk of the government's wartime financing. The raising of funds from noninflationary sources was continuously stressed with the result that a greater proportion of the debt was sold to nonbank investors. It may be seen in Table III that government securities held by banks increased from \$18,-600,000,000 to \$107,100,000,000 during 1940-46, while the total held by nonbank investors rose from \$29,300,000,000 to \$161,500,000,000. All the means of modern publicity were used to promote the sale of U.S. savings bonds, with the result that the volume of these securities outstanding increased to \$49,035,000,000 in 1946.

An important element in the sale of savings bonds throughout the war period was the widespread adoption of the pay roll deduction plan sponsored by the treasury. The peak in the number participating was reached in June 1944 when about 27,600,000 employees had \$540,000,000 of their monthly pay deducted for the purchase of war bonds. During the fiscal year 1945, the total sale of bonds by this method was about \$6,000,000,000 out of total gross sales in this category of securities of \$11,600,000,000. With the beginning of a declining trend in employment in war industries, the number of persons participating in the pay roll savings plan declined. By mid-1946 there were only about 7,500,000 persons purchasing savings bonds by the pay roll deduction plan. (See also War Bonds.)

A significant feature of the management of the public debt during the war was the low interest rate policy that was adopted and maintained by the government. World War II was financed at an average rate of interest of 1.8% on the securities issued, compared with an average rate of 4.25% on the securities issued to finance World War I. Interest rates during the period of World War II rose only moderately above the level prevailing during the depression of the 1930s,

the highest rate for long-term market issues being 2.5%. As a special inducement to individuals to increase their savings and thus assist in the government's anti-inflation program, the interest rate on savings bonds held to maturity was fixed at 2.9%.

For securities outstanding, the computed annual rate of interest amounted to 2.015% in Aug. 1946 compared with 2.26% in June 1942. As may be seen in Table II, the major factor in this decline was the proportionate rise in certificates of indebtedness and notes outstanding.

Although these securities carried a low interest rate, they were a popular outlet, because of their high degree of liquidity, for business funds being built up during the war. The large increase in the holdings of government securities by nonfinancial corporations during World War II is shown in Table III.

Table III.—Ownership of Government Interest-Bearing Securities
(Billions of dollars)

		June	: 30	
	1937	1940	1943	1946
Total amount outstanding	40 5	47.9	139.5	268.6
Total held by banks	16.7	18.6	59.4	107.1
Commercial banks	14.2	16.1	52 <i>.</i> 2	83.3
Federal reserve banks	2.5	2.5	7.2	23.8
Total held by nonbank investors	238	29.3	80.0	161.5
Individuals	9.9	9.7	30.3	63 0
Insurance companies	5.0	6.5	13.1	25.3
Mutual savings banks	24	3.1	5.3	11.5
Other corporations and associations	26	2.6	1 <i>5.7</i>	26.5
State and local governments	0.3	.3	1.3	6.2
U.S. government agencies and trust funds	3.6	7. 1	14.3	29.1
Sources: Annual Papert of the Secretary of the	he Treasu	ev (1945)	and Treat	eury Rull

(Oct. 1946).

State and I ocal Government — The figures on the deb

State and Local Government.—The figures on the debt of state and local governments, 1929–45, are shown in Table IV. Because of the many government subdivisions in

Table IV.—Debt of State and Local Governments, United States (Millions of dollars)

End of	Takal	C4-4-	C		School dis- trict and spe-
fiscal year	Total	State	County	Municipal	cial district
1929	17,234	2,300	2,270	9,259	3,405
1930	18,459	2,444	2,434	9,929	3,652
1931	19,534	2,666	2,564	10,458	3,846
1932	19,804	2,896	2,565	10.483	3,860
1933	19,985	3,018	2,521	10.577	3,869
1934	19,286	3,201	2,477	9,730	3.878
1935	19,429	3,331	2,433	9,778	3.887
1936	19,662	3,318	2.389	10,058	3,897
1937	19,594	3,276	2,345	10,067	3,906
1938	19,576	3,309	2,282	9,923	4.062
1939	19,996	3,343	2,219	10,215	4,219
1940	20,246	3,526	2,156	10,189	4,375
1941	20,183	3,370	2,046	10,210	4,557
1942	19,643	3,163	1,846	10,079	4,554
1943	18,645	2,862	1,634	9,784	4,365
1944	17,426	2,768	1,694	8,624	4.165
1945	16,552	2,338	1,525	8,589	4.050
Source: U.S. de	partment of	commerce.	•	,	.,,,,,,

the United States and the many functions of government remaining in the hands of local government units, the state and local government debts in the United States had always been an important component of total government.

always been an important component of total government debt. It arose largely from the financing of the various types of public works, although during the period of de-

Table V.—National Debt of Various Countries

		,, ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,			
Country (Unit of currency)*	Date	Total debt (in millions)	Country (Unit of currency)*	Date	Total debt (in millions)
Africa			France (franc)	12/31/35	341,437‡
Egypt (pound)	4/30/35 4/30/40	100 93		12/31/40 5/31/46	708,679‡ 1,9 9 9,441‡
Union of South Africa (pound)	1/31/45 3/31/35	92 2 74	Germany (reichsmark)	3/30/35 3/31/40	12,526 47,950
	3/31/40 3/31/46	291 584	Greece (drachma)	3/31/45 3/31/35	383,100 44,985
America, North Canada (dollar)	3/31/35 ⁻	3,012		3/31/40	52,746
<u> </u>	3/31/40 3/31/46	3,696 16,807	Hungary (pengo)	6/30/35 12/31/40 12/31/43	1,693 3,045 6,501
Mexico (peso)	12/31/35 12/31/40 12/31/45	1,339 1,828	Italy (lira)	6/30/35 6/30/40	107,269 190,011‡
United States (dollar)	6/30/35	1,382 28,701		6/30/46	1,051,153‡
,	6/30/40 6/30/46	48,500 269,422	Netherlands (gulden)	12/31/35 12/31/40 6/30/46	3,459 5,330 16,706
America, South Argentina (peso)	12/31/35	3,572	Norway (krone)	6/30/35	1,552
Argonima (poso)	12/31/40 12/31/44	5,187 9,721		6/30/39 5/31/46	1,528 6,908]
Brazil † (cruzeiro) (milreıs)	12/31/35	21,828	Poland (zloty)	12 /31 /35 3 /31 /39	4,759
	12/31/40 12/31/44	23,998 39,536	Portugal (escudo)	12/31/35	5,318 7.237
Chile (peso)	12/31/35	4,195		12/31/40	6,390
	12/31/40 12/31/45	4,409	Rumania (ley)	12/31/43 3/31/35	8,761 139,052
Colombia (peso)	12/31/45	6,665 187	Romania (lev)	3/31/42	108,698
Colombia (poso)	12/31/40	205		10/13/45	911,000
	4/31/46	400	Spain (peseta)	12 /31 /35 12 /31 /40	21,266 24,152
Ecuador (sucre)	12/31/35 12/31/40	290 435		12/31/43	34,947
	5/31/45	635	Sweden (krona)	6/30/35	2,487
Peru (sol)	12/31/35	690		6/30/40 6/30/46	3,625 11,195
	12/31/40 6/30/45	906 1,524	Switzerland (franc)	12/31/35	2.308
Asia		-		12/31/40	6,911
India (rupee)	3/31/35 3/31/40	12,395 11,957	Turkey (pound)	12/31/45 5/31/35	12,682 480
	3/31/46	19,650	torkey (posite)	5/31/40	842
Japan (yen)	3/31/35	9,613		12/8/45	1,489
	3/31/40 7/31/46	23,481 219,075	United Kingdom (pound)	3 /31 /35 3 /31 /40	7,902 9,083
Europe	• •	-		8/31/46	25,092
Belgium (franc)	12/31/35 12/31/40	55,453 71,333	Yugoslavia (dinar)	3 / 1 /35 3 /31 /39	29,711 24,620
	6/30/46	278,868	Oceania	• •	•
Bulgaria (leva)	12/31/35	22,180	Australia (pound-Aust.)	6/30/35 6/30/40	1,242 1,341
	12/31/40 12/31/45	26,000 90,000		3/31/46	2,818
Czechoslovakia (koruna)	12/31/35	39,924	New Zealand (pound—N.Z.)	3/31/36	322
Czechosłovakia (korona)	3/15/39	52,425		3 /31 /40 3 /31 /45	362 603
	12/31/45	97,641	*For approximate value of various currencies see Exc	hanae Control	and Exchange
Denmark (krona)	3/31/35 3/31/40	1,312 1,619	Rates.	-	_
	3/31/45	3,831	†Prior to Nov. 1, 1942, the official designation of the milreis.	Brazilian curren	cy unit was the

4,629 16,767 69,939

Includes the internal debt only.

Sources: Statistical Yearbook and monthly statistical bulletins of the League of Nations; official government sources.

clining economic activity from 1929-33 the falling-off of revenues and increasing expenditures for relief added to the debt total. From 1933 on, state and local debt varied little, as the federal government took over the major burden of relief and also financed much of the public works of state and local governments.

Finland (markkaa)

During 1941 and 1942, state and local debt declined slightly as government revenues increased with the rising tide of national income and as scarcity of materials tended to limit public works expenditures. This trend was accelerated during the subsequent war years as the expansion of the national income led to ever greater revenues of state and local governmental units. From its peak in 1940 of \$20,246,000,000, total state and local debt declined to \$16,552,000,000 in 1945. All types of governmental units experienced debt reduction, though the decline in state and county debt was proportionately larger than for municipalities and school districts.

Other Countries.-National debt statistics covering the decade 1937-46 for the leading countries of the world are given in Table V. In the period before World War II, the changes in national debts were of moderate proportions. There was considerable diversity in trend as debts were rising in some of the countries but falling in others. For almost the entire world this situation was dramati-

cally changed after the outbreak of World War II. The debt of all belligerent countries rose phenomenally, and even some of the neutral countries had to increase their expenditures to an extent that made borrowing necessary.

The experience of all the major belligerent powers was similar. The debt of the United Kingdom was increased to £25,092,000,000 by 1946 from £9,083,000,000 in 1940. The national debt of Germany was already r.m.47,950,000,000 in early 1940 because of the heavy armament expenditures during the latter half of the 1930s. By the time the country was defeated, however, the national debt had risen to r.m.383,100,000,000. Italy, Japan and France all saw their national debt multiplied. The only large area of the world not subject to rising debt totals during the war period was Latin America. (See also Budgets, National; Great Brit-AIN AND NORTHERN IRELAND, UNITED KINGDOM OF; INCOME AND PRODUCT; TAXATION.)

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94 Decorations, Military, Naval and Civil

Gen. George Washington established a new precedent in the awarding of decorations by creating the Purple Heart on Aug. 7, 1782. This apparently was the first time that a decoration was made available to non-officer, enlisted personnel in any army of the world. It is singular enough that there was a record of only three awards—all to sergeants.

This original Purple Heart went into disuse and it was not until the 200th anniversary of the birth of Washington on Feb. 22, 1932, that announcement was made of the decoration's revival. The new decoration consisted of a bronze metal pendant with a purple coloured heart on which was imposed a profile of Gen. George Washington in military uniform. Above the heart was the shield of Washington's coat of arms between two sprays of leaves in green enamel. On the reverse, below the shield and leaves, without enamel, was a raised bronze heart with the inscription "For Military Merit." The ribbon was designed in purple with white edges.

On Jan. 28, 1940, Brig. Gen. William H. Bisbee was awarded a Purple Heart on his 100th birthday for "outstanding service in the Union Army from 1861 to 1865." This was the only award of this decoration for service during the Civil War.

The Purple Heart later was awarded by the war department to those who were wounded, or posthumously to those killed, as a result of enemy action on or after Dec. 7, 1941. On Dec. 3, 1942, an executive order was issued by the president whereby the secretary of the navy was

authorized also to award this decoration to persons in the navy, marine corps and coast guard who were wounded in action against an enemy of the United States.

One of the most outstanding awards of this decoration posthumously was made to Mr. and Mrs. Thomas F. Sullivan of Waterloo, Ia., who on Jan. 25, 1944, were presented Purple Hearts for the loss of their five sons during World War II.

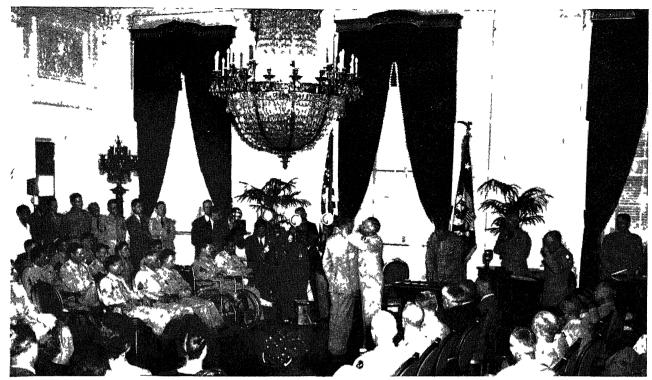
In 1918 the U.S. congress had established a three-sixteenths inch silver citation star prescribed to be worn as the president might direct. This star was placed on the ribbon of the service medal for the particular war in which the individual served. It was discontinued in 1932, to be worn in this manner; at the same time it was directed that it would thereafter be within a wreath on a larger bronze star. The reverse was to be inscribed with the words "For Gallantry in Action" and the name of the recipient. This bronze star was suspended from a ribbon of five equally divided stripes of blue, white, red, white and blue between narrow edge stripes of blue and white. First awards of the silver star to women were to three army nurses on March 17, 1944—2nd Lt. Rita Rourke, 2nd Lt. Arlitta Roe and 1st Lt. Mary Louise Roberts.

A marine corps reserve medal was authorized Feb. 19, 1939, to be worn as evidence of four years' service in the organized marine corps reserve. The obverse showed a marine and civilian walking and the inscription "Marine Corps Reserve" and "For Service." The ribbon was made of yellow with a red central stripe, each edge bordered red, white and blue.

Prior to World War II an individual was not authorized

Capt. Joseph J. Foss of the U.S. marines receiving the congressional medal of honour from President Roosevelt May 18, 1943, for downing 26 Japanese planes. With him were his mother (left) and wife





President Truman awarding the congressional medal of honour to 28 veterans of the European and Pacific theatres on Aug. 23, 1945. The White House ceremony was attended by relatives and high ranking officials of the army and navy

to wear a service ribbon to represent a service or campaign medal unless he was physically in possession thereof. However, because of the shortages of metals during World War II, authority was granted for an individual to start wearing a ribbon immediately after having qualified for the medal.

On June 28, 1941, the president authorized an American defense service medal for service in the army, navy, marine corps and coast guard during the limited emergency from Sept. 8, 1939, to the end of the unlimited emergency proclaimed May 27, 1941, which was later established as Dec. 7, 1941. The obverse showed Liberty in attitude of defense, holding a shield and sword and standing on live oak with branches terminating in leaves representing army, navy, marine corps and coast guard. For those in the army who were overseas a clasp for "Foreign Service" was authorized; those in the navy could wear a clasp with the word "Fleet" or "Base," while those on designated vessels in the Atlantic fleet could wear a bronze "A." Both services were authorized to wear a bronze star on the service ribbon to represent the clasps. The ribbon was golden yellow with narrow stripes of blue, white and red near each edge.

On the same day the president authorized the army to have a good conduct medal to be given enlisted personnel for three years' service in peacetime or one year's service during wartime for exemplary behaviour, efficiency and fidelity. The medal has an eagle standing on a closed book and sword, showing the close of a military period of service, inscription, "Efficiency, Honor, Fidelity." Reverse shows a star above a scroll between the words "For Good" and "Conduct" within a laurel and oak wreath. The ribbon was designed in red with white stripes, making 13 in all. The award was authorized for members of the Women's Army corps in 1944.

On Nov. 21, 1941, the army of occupation of Germany

medal for World War I between 1918 and 1923 was authorized. The first issue of this medal was made to Gen. John J. Pershing, whose profile appeared on the obverse of the medal; the ribbon was black edged with blue, red and white.

On Feb. 26, 1942 (amended Nov. 22, 1943), the president authorized award of the army distinguished unit badge consisting of a blue ribbon worn within a gold frame. A presidential unit citation for the navy was also authorized on Feb. 26, 1942, consisting of a horizontally striped ribbon blue, gold and red in descending order.

The legion of merit in four grades was authorized by congress July 20, 1942, for award to personnel of armed forces of friendly foreign nations and personnel of armed forces of the U.S. and Philippines who had distinguished themselves by exceptionally meritorious conduct in the performance of outstanding services after Sept. 8, 1939.

The air medal was authorized by the president on May 11, 1942, and first awards were made in 1943.

Aug. 7, 1942, congress authorized the president to present, but not in the name of congress, a navy and marine corps medal to those who had distinguished themselves by heroism not involving actual conflict with an enemy.

The merchant marine distinguished service medal was authorized April 11, 1942, for those in the merchant marine who on or before Sept. 3, 1939, distinguished themselves in the line of duty. The merchant marine combat bar consisted of a horizontal light blue and dark blue ribbon separated by a red stripe edged in white; if the crew member was forced to abandon his vessel a silver star is placed in the centre of the ribbon.

A medal for merit was authorized by congress June 20, 1942, to be awarded to civilians of the U.S. who distinguished themselves by exceptional meritorious conduct in the performance of outstanding services. This was the civilian counterpart to the Legion of Merit.

Congress authorized the mariners medal on May 10, 1943, for those serving on any vessel in the American merchant marine during the war period, who were wounded,

suffered physical injury or suffered through dangerous exposure as a result of an enemy of the U.S. The obverse was an eagle on an anchor in silver on a cross of Malta. Reverse showed a hand carrying a torch with a wreath and waves, inscription "United States Merchant Marine." Ribbon, red and blue with a narrow centre white stripe.

The bronze star medal was created for both the army and navy on Feb. 4, 1944

The navy established its commendation ribbon in 1944. The army created a meritorious service unit plaque for organizations in 1944.

The United States of America Typhus commission medal was authorized Dec. 24, 1942, but was not struck until 1944.

The combat and expert infantryman badges were created along with miniature aviation badges for wear on shirts; the gliders badge and divers badge were also created in 1944.

In 1944 the design of the Women's Army corps medal was selected but was not struck until 1946. The obverse shows the head of Pallas Athene in front of a sheathed sword and palm branch surrounded by the inscription "Women's Army Corps." The ribbon, "mosstone green," is edged with "old gold."

The lapel button for service subsequent to Sept. 8, 1939, was selected in 1944 and made of gold plated plastic, but when metal was available in 1946, gold plated bronze was used.

The bronze service arrowhead was authorized for wear on the appropriate theatre ribbon in 1944 to represent an amphibious assault or parachute landing behind enemy lines.

"Just Gimme Th' Aspirin. I Already Got a Purple Heart," Sergeant Bill Mauldin's version of the U.S. soldier's attitude toward the frequently awarded decoration. Mauldin drew his series, "Up Front with Mauldin," for the army newspaper Stars and Stripes at the bottle fronts of World War II



Congress also authorized a victory medal for World War II. Announcement was made on Oct. 25, 1945, by the war department describing the ribbon as two double rainbows in juxtaposition separated by a central band of red bordered in white. The medal design was selected in 1946 to be "Liberation," standing on a war god's helmet, crushing it back into the earth, holding a broken sword of tyranny in her hand and looking toward the dawn of a new day with an inscription "World War II."

The president on July 6, 1945, authorized a "medal of freedom" for those who performed a meritorious act or service which aided the U.S. in the prosecution of a war against an enemy or enemies. It showed the head of "Freedom" taken from the pinnacle of the capitol of the U.S. The ribbon, red with four white pin stripes representing the four freedoms. Congress authorized a selective service medal on July 2, 1945, for those who gave their services to draft boards, etc., for which no compensation was made. The obverse showed the seal of the Selective Service system. The ribbon, blue and yellow stripes. First awards were made by the president Jan. 21, 1946.

The coast and geodetic survey was authorized on July 21, 1945, by congress to create six ribbons for distinguished service, meritorious service, good conduct, Atlantic war zone, Pacific war zone and defense service.

The war department announced Dec. 18, 1945, the army commendation ribbon, consisting of 13 green and white stripes. An exceptional civilian award decoration was approved Dec. 29, 1945, and a badge for medical corpsmen was authorized July 28, 1945.

An executive order of Nov. 6, 1942, originally authorized the creation of ribbons and medals for three theatres during World War II. The medal designs were under consideration in 1946. The ribbons adopted were as follows:

American campaign—blue for the Americas, with black and white stripes near each edge representing the German part of the conflict on the Atlantic, and red and white stripes the Japanese part of the Pacific.

European-African-Middle Eastern campaign—brown for the sands of Africa on each edge, green in central section for the fields of Europe, green, white and red stripes near one edge—the Italian part; white, black and white stripes near the other edge—the German pact.

Asiatic-Pacific campaign—orange background with white and red stripes representing Japan.

A blue, white and red stripe in the centre of each ribbon-U.S. colours-showed all the service was concurrent. (A. E. Du.)

Great Britain and Commonwealth.—The main additions after 1937 to the list of British orders, decorations and medals for personal gallantry were the George cross (ribbon: garter blue, with a replica of the cross in silver when worn in non-dress) and George medal (red with five narrow stripes of blue), established in Sept. 1940. Intended primarily for civilians, men and women, they were also awarded to members of the fighting services, and could be awarded posthumously. The former was granted "only for acts of the greatest heroism, or of the most conspicuous courage in circumstances of extreme danger," and the G.M. in similar circumstances where the services were not so outstanding, but were still of a very high standard. (The G.C. superseded the medal of the Order of the British Empire "for gallantry," leaving the British Empire medal, military or civil, for award to members of the armed forces or civilians for meritorious service in peace or war.) On April 18, 1942, a new precedent was created when the George cross was awarded to the island of Malta in recognition of the epic resistance of its beleaguered population.

Early in World War II the naval distinguished service cross, previously awarded to officers of and below the equivalent rank of lieutenant commander, was made available to commanders. Personnel of the merchant navy were made eligible for the D.S.O., D.S.C., the naval conspicuous gallantry and distinguished service medals, for gallantry or meritorious acts while serving in close contact with the royal navy.

A new conspicuous gallantry medal (pale blue with dark blue edges) was established for airmen for acts of outstanding courage during air operations.

The king's medals for courage (ribbon: white, broad red edges with two narrow central stripes of blue) and for service (white, with a narrow central stripe of red and narrow stripes of blue towards each edge) were instituted in 1945 for Allied or other foreign persons, mainly civilians, without distinction of status or rank. The medal for courage was for those who helped members of the British forces to escape from, or to evade, the enemy, or for other services involving risk to life or danger in hazardous circumstances, and that for service for outstanding civilian services in a variety of ways.

Instituted during the war were the order of Burma (ribbon: green with pale blue edges), in one class, and the Burma gallantry medal (green with central stripe of crimson). With the king's approval, Canada in 1943 established the Canada medal (red, white and red) for meritorious service above and beyond faithful performance of duty by citizens of Canada and Allied nations, and the Canadian service medal (dark blue flanked by stripes of red with green edges, and silver maple leaf worn on the ribbon by those who served outside Canada) for all men and women who served in the armed forces of the dominion. The Africa service medal (orange flanked by stripes of gold with green edges) was similarly instituted in 1943 for all members of the Union defense forces attesting in Africa before May 13, 1943, the date of the axis surrender in Tunisia.

The following British stars and medals for war service in the armed and other forces and services in World War II were instituted (ribbon colours follow in brackets): 1939-45 star (three equal bands of dark blue, red and light blue); Atlantic star (blue and green shading centrally into white); air crew Europe star (pale blue, edged with yellow and flanked with black); Africa star (red band on buff background, flanked on one side by a dark and on the other by a light blue stripe, with clasp numeral "8" or "1" for service with eighth or first army and silver rosette for service with royal navy, R.A.F. or merchant navy); Pacific star (green band on red, centred with a yellow stripe and edged on one side with a dark and on the other with a light blue stripe); Burma star (red, flanked on either side by equal stripes of dark blue, orange and dark blue); Italy star (equal bands, red, white, green, white, red); France and Germany star (equal bands, blue, white, red, white, blue); defense medal (red, flanked on either side by a green band containing a black stripe); India service medal (dark and light blue); war medal 1939-45 (red, white and

The 1939-45 star (originally 1939-43) was first awarded for service with the British expeditionary forces in France, Belgium and Norway in 1939-40, and for service in subsequent commando and special operations not covered by the Africa star; later it was awarded for six months' service in any overseas operational theatre. Qualifications for the defense medal were three years' service with the forces in nonoperational areas open to air attack, or with the civil defense or other specified service (home guard, coast-guard, civil nursing reserve, etc.) in any area threatened

from the air; or one year's nonoperational service with the forces overseas.

A bronze oak leaf was instituted for mention in dispatches, and the king's commendation emblem for civilians for brave conduct.

Belgium.—World War II decorations comprised the croix de guerre (1940); croix des evadés; croix de la résistance; médaille de la résistance; a volunteers' 1940-45 medal, and a war commemorative medal.

Czechoslovakia.—Established during World War II were the war cross (1939) and medal for bravery (1940).

France.—General de Gaulle established in 1941 the ordre de la libération, and in 1943 the médaille de la résistance Française.

Greece.—The royal order of George I, with its crimson ribbon, established in 1936, is awarded in five classes in military and civil divisions, with and without swords; the war cross, 1940–44, in three classes (1ibbon: three equal stripes of red, blue, red). Distinguished conduct medal. 1940–44 (orange moiré with black stripes towards each edge).

The Netherlands.—The following decorations were established during World War II: bronze cross (1940) for gallantry in action; good service cross (1941) for courage of a nonmilitary character in connection with enemy action: flying cross (1941) for gallantry in the air; bronze lion, for honourable mentions; commemorative cross of the war, equivalent to a campaign medal or star.

Norway.—The War cross (1941) for conspicuous bravery in action and the war medal (1941) for meritorious service in war were instituted.

Poland.—The Grunwald cross, a military decoration in three classes, a medal for service in the field, the partisan's cross and a medal for Polish troops in action at Monte Cassino, Italy, were established.

U.S.S.R.—In addition to the various awards, with badges, available to citizens, soldiers, sailors and airmen of the U.S.S.R. before the war with Germany, the following awards, with ribbons, were established during the course of World War II, for war services: order of victory (1943), one class only and the highest military decoration; order of Suvorov (1943) three classes; order of Kutuzov, three classes; order of Alexander Nevsky (1942) one class; order of glory (1943) three classes; order of the patriotic war, two classes; order of Ushakov, two classes and a medal; order of Nakhimov, two classes and a medal; order of Bogdan Khmelnitsky, two classes and a medal; medals for valour; for distinguished service in battle; guerrilla service; distinguished industrial services; labour distinction; for defense of Stalingrad, Odessa, Leningrad, Moscow and Sevastopol; in addition together with a series of "motherhood decorations" instituted in 1944: motherhood medal, two classes, for five or six children; order of motherhood glory, three classes, for seven, eight or 9 children; order of heroine mother, for ten children.

Germany.—The highest German decoration under the nazi regime was the *Deutsches kreuz* with two classes, gold and silver, no ribbon. The first was awarded for courage in the face of the enemy, the second for "leadership of men" not in action. The badge was in the form of a metal star, with a swastika in the centre surrounded by rays. It was worn like the star of an order. The iron cross, founded in 1813, and used in the wars of 1870–71 and 1914–18 with its black ribbon with broad white stripes toward each edge, was revived by Adolf Hitler on Sept. 2, 1939, for gallantry in action. The new ribbon had a broad red cen-

tre bordered by stripes of white with black edges, the decoration itself being a Maltese cross of black iron edged with silver bearing the swastika in the centre and the date "1939" on the lower limb. There were various degrees, starting with the lowest, second class, worn on the breast from the ribbon; first class, a slightly larger badge without ribbon worn on the breast like the badge of an order (bars, in the form of a silver nazi eagle and swastika over the date "1939" could be awarded with the second and first classes for a second act of bravery) and knights' cross, a larger cross worn round the neck from the ribbon. Still higher awards, with the cross embellished as described and worn round the neck, were the knights' cross with oak leaves, knights' cross with oak leaves and swords, knights' cross with oak leaves, swords and diamonds. The Iron cross, grand cross, the highest grade of all, was granted only once during World War II, to Hermann Goering after the surrender of France in 1940. Instituted during the war was the war merit cross (ribbon: black centre, bordered by stripes of white and red), inferior to the iron cross. It was in two classes, silver and bronze, and was granted with or without swords for services in action or otherwise.

Germany had a cross of honour for the Spanish campaign, 1936, with no ribbon and worn like the badge of an order.

The four classes, bronze, silver, gold and gold with diamonds, were awarded by rank. The nazi government awarded various medals, among them the *Anschluss* medal, for the occupation of Austria, 1938 (red bordered by stripes of black with narrow white edges); the Sudetenland medal, for the occupation of the "Sudetenland," 1939 (black, red, black in equal stripes); the protectorate medal, for the occupation of Bohemia and Moravia, 1939, which was the same as the last-named but worn with a clasp.

The gold badge of the National Socialist party, indicating membership of the party before Jan. 30, 1933, could be worn in uniform, though the ordinary party badge could not.

The blood order, awarded to Hitler's adherents who took part in the abortive *putsch* in Munich in 1923, had a ribbon practically the same as that of the iron cross.

Italy.—Apart from the orders and medals already in existence at the end of World War I, Italy had established a medal for aeronautical valour for personnel of the air force; it corresponded to the medal for military valour of the army and navy, and had three classes—gold, silver and bronze—with a ribbon of bright blue *moirė* with two scarlet stripes toward each edge.

There was also a bronze cross for military valour, a lower grade than the bronze medal of the same name, but worn with the same blue ribbon, and a cross for merit in war (ribbon: dark blue, with two broad white stripes toward the centre).

A profusion of medals were established during Benito Mussolini's fascist regime, among them the following: march on Rome, 1922 (half dull crimson, half yellow); United Italy, 1918–22 (green centre, with broad edges of white and red); fascist medal, 1920–23 (black, with edges of green, white and red); fascist bronze cross, for ten years' service in fascist militia (same ribbon as the medal); fascist medal, purpose unknown (black with central stripe of green, white, red); for service to fascist youth movement (claret, with central stripe of green, white, red); maternity and child welfare (white moiré); medal for parents of those killed in action (gray, with central stripe of green, white

and red).

Italian war medals included the following: Abyssinian campaign, 1935 (nine equal stripes of blue and black); volunteers' medal, Abyssinia (claret, blue centre with two black stripes). A number of medals were struck for service in the Spanish civil war, 1936-39, some being awarded by General Francisco Franco. Italy issued a bronze medal for the occupation of Albania in April 1939, with a ribbon of 18 narrow black and red stripes. During the period Italy was allied with Germany (1940-43), medals were issued to commemorate the occupation of Dalmatia, 1941 (black, with edges of narrow stripes of red, yellow, blue, yellow and red); Greece, 1941 (seven alternate stripes of blue and white); Greek campaign, 1940-41 (equal stripes of blue, red, white, green, red, white, green and blue); bronze medal of 1941, bearing the effigies of Mussolini and King Victor Emmanuel with Italian inscription to the effect that the war would continue until the final victory of the axis allies (dark blue, flanked by the green, white and red of Italy, and the red, white and black of Germany). The most interesting medal of all, however, was that struck for the campaign in Africa, which was to have been awarded to the German and Italian troops on their triumphal entry into Cairo.

The ribbon was in five equal stripes of green, white, red, white and black, the colours of Italy and Germany. The obverse of the medal showed two knights in armour (Germany, Italy) standing on the forepaws of a helpless crocodile (the British empire) and forcibly closing its jaws (the Suez canal).

On the reverse was a triumphal archway over a reefknot, with the fasces on one side and the swastika on the other. Round the edge in both languages—"German-Italian Campaign in Africa."

The symbolism was premature.

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See RECONSTRUCTION FINANCE CORPORATION.

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See RECONSTRUCTION FINANCE CORPORATION.

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See RECONSTRUCTION FINANCE CORPORATION.

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See WAR AND DEFENSE AGENCIES.

Degrelle, Léon Marie Joseph Ignace

Degrelle (1907—), Belgian politician, born of wealthy parents, was educated at Louvain university. He practised law and in 1935 formed within the Catholic party the "Rex" (originally Christus Rex) movement. A pro-fascist organization, the Rexists entered politics and won 21 seats in 1936, thanks to propaganda and funds suspected to be of German origin. In March 1937, Degrelle, in a move to test his popularity, ran for parliament against Paul van Zeeland. He was defeated by 275,840 votes to 69,242.

Arrested in May 1940 when German armies invaded Belgium, Degrelle was transferred to a prison in France. He was released after the armistice of June 22, 1940, and returned to Belgium. Thereupon, he joined the German army, serving as a lieutenant on the eastern front. He later returned to the reich.

In 1945, Degrelle fled to Spain where he was interned in San Sebastian. Belgium's request for his extradition was at first ignored by Spain, although later the Madrid government informed the Belgian ambassador that Degrelle had escaped from custody and had "disappeared." The Belgian government filed a complaint before the United Nations (Oct. 16, 1946), that Spain had refused to give it any information as to Degrelle's whereabouts.

Delaware

A state of the middle Atlantic seaboard and one of the 13 original colonies, Delaware is popularly known as the "Diamond state" and also known as the "First state" because it was the first to ratify the federal constitution (Dec. 7, 1787). Area 2,399.2 sq.mi., including 437.5 sq.mi. of water. Population (1940) 266,505, of which 139,432 were urban and 127,073 rural. Native white numbered 215,695; foreign born 14,913; Negro 35,876.

The principal city is Wilmington, 112,504; the capital is Dover, 5,517. In 1944 the civilian population was estimated at 283,802.

Richard C. McMullen was inaugurated as governor in Jan. 1937, the first Democrat to hold that office since 1901. A legislative act was passed in 1937, proposing a constitutional amendment for the reorganization of the state judiciary, including the creation of a supreme court of three justices, and the consolidation of civil and criminal courts. On Dec. 7, 1937, the state celebrated the 150th anniversary of its ratification of the federal constitution.

An important event in the state in 1938 was the Tercentenary celebration which marked the 300th anniversary of the landing of the Swedes and Finns in America on March 29. On June 27 the Crown Prince of Sweden and President Roosevelt were present for the unveiling of a monument given by the people of Sweden, commemorat-

The Delaware tercentenary in 1938 was observed by special festivities climaxed by the unveiling of a gift monument from Sweden at Fort Christina State park, commemorating the founding of the colony of New Sweden. The Crown Prince of Sweden is shown on his arrival for the unveiling ceremonies



ing the landing and founding of the colony of New Sweden. The year also marked the bicentennial of the establishment, at Wilmington, of the first Friends meeting-house. In the November elections of 1938 the Republicans gained control of the house, retained control of the senate and elected George S. Williams as United States congressman.

The legislative session in 1939 was marred by conflict between a Republican legislature and the holdover Democratic administration. The Republicans gained control of the election machinery of New Castle county by legislation passed over Governor McMullen's veto, and, after legal action, of the politically important highway department. Demands were made for the repeal or enforcement of the state's "blue laws," following a veto in April of a measure authorizing Wilmington to legalize Sunday movies. Surveys in Wilmington during the summer revealed that hundreds of technical violations occurred every Sunday.

In the presidential election of 1940, Roosevelt received 74,599 votes; Willkie, 61,390, with 51.1% of the voters (fourth highest in the nation) going to the polls. The Democratic candidates won all state administrative offices except the governor's, and Delaware's Washington delegation became entirely Democratic for the first time after 1919.

The Republicans, however, retained control of the state legislature and although Governor McMullen (Dem.) was slated to succeed himself, poor health obliged him to withdraw and Republican Walter W. Bacon, mayor of Wilmington, was elected.

Measures passed by the 1941 legislature included a Fair Trade act, permitting manufacturers to set minimum resale prices for trademarked commodities; acts for permanent automobile registration; repeal of the old "blue laws" forbidding worldly labours and amusements on Sunday; an improved workmen's compensation law; and new regulations regarding registration and election officials.

(H. C. RD.; X.)

The 1942 election was won by the Republican party. C. Douglass Buck replaced Senator James H. Hughes and Earle D. Willey won over Dr. Philip A. Traynor for representative. Senator James M. Tunnell, Sr. (Dem.), a holdover, was the other congressional delegate for Delaware. The state offices of attorney general, treasurer, auditor, insurance commissioner and nearly all county offices were won by the Republicans, who also remained in control of the legislature. By the end of 1942, 14,000 persons from the state were in the armed forces and 100,000 were engaged in civilian defense. The vital Wilmington area was filled with workers building ships, planes and other military products, military zones and dimout areas were set up, and living costs increased sharply.

In 1943 the state legislature was in session from Jan. 4 to April 9. Important legislation included the establishment of a state guard, the conferring of emergency powers upon the governor, and creation of a state soil conservation commission. Activities of the civilian defense organizations reached their peak in 1943; factories of the state continued production of war materials at a high rate, and retail and wholesale business increased an estimated 15%.

In the November elections of 1944, the state polled 126,423 votes or 68.7% of the registered voters. Roosevelt received 68,166 votes; Dewey, 56,747. Walter W. Bacon was re-elected governor by a plurality of 1,673. Earle D. Willey (Rep.), incumbent, was defeated by Philip A.

Traynor (Dem.) for congress. The state offices of lieutenant governor, treasurer and auditor were won by the Democrats. Governor Bacon's administration was supported by a legislature in which the Republicans had a controlling number of seats in both the senate and the

Beginning in January, the 1945 legislature met for 60 legislative days. Outstanding legislation included modification of election and banking laws, establishment of the family court, creation of a state pension system, and a measure providing for a Delaware crossing. Charles S. Richards became chief justice of the supreme court and James B. Carey succeeded him as resident judge. Soon after V-J day, the state council of defense and other war agencies terminated their work and Fort Dupont and Fort Delaware, which had maintained surveillance over the Delaware river shipping area, were closed by the war department. Factory employment after V-J day dropped 22% and pay rolls decreased about 18%, most of the decrease occurring in the shipyards and machine shops of Wilmington. Retail and wholesale sales were ap-

Delaware: Statistical Data

			, 00.0 1.	Labeane	(. 00)			
			1938	1941	1942	1943	1944	1945
Elementary pupils . High school pupils .	:	:	33,339 11,65 3	29,992\ 17,956	43,098	42,641	42,086	42,315
Elementary teachers High school teachers			868) 761			1,679		1,589

Table II.—Public Welfare (Money figures in thousands of dollars)

	1937	1938	1939	1940	1941	1945
Cases on general relief Cost of general relief	1,537 \$26	2,239 \$46	1,452 \$27	1,259 \$25	951 \$19	
Recipients of old-age pensions Cost of pensions Dependent children receiving		2,600 \$28		2,686 \$30	2,507 \$29	
aid		1,098		1,387	1,735	3,115
compensation		57,669	61,354	66,300		

Table III.—Communications (Money figures in thousands of dollars)

	1938	1939	1941	1943	1944	1945
State highway mileage . Expenditure on highways Railroad mileage	3,883 \$4,140 297	3,894 \$4,1 <i>57</i> 297	3,930 \$4,468	3,939 \$2,595	3,939 \$2,621 279	3,898 \$3,077 279

proximately 10% and 5% greater, respectively, than in the previous year. Marriages and deaths in the state were not as great as in the previous year, but the birth rate increased 5% in 1945. (L. D. V.; X.)

At the general election in Nov. 1946, Republicans were elected to congressional and state offices. The total number of voters was highest for the office of U.S. senator, 113,533 of a total of 169,703 qualified voters. The following were elected: U.S. senator, John J. Williams; U.S. representative, J. Caleb Boggs; attorney-general, Albert W. James; state treasurer, Benjamin F. Johnson; state auditor, Benjamin I. Shaw; insurance commissioner, William J. Swain. Gov. Bacon, Secy. of State William J. Storey and State Tax Commissioner Pierre S. du Pont continued in office. The state legislature of 52 members was composed of 35 Republicans and 17 Democrats. (J. En.)

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Table IV.—Banking and Finance (Money figures in thousands of dollars)

	1937	1939	1941	1943	1944	1945
State revenue	\$12,080	\$15,410	\$13,069	\$12,140	\$13.534	\$13.875
State expenditure					,	4,
gross debt	\$12,038	\$10,855		\$10,111	\$10,974	\$11,521
Number of national						•
banks	16	15	15	13	13	13
Deposits of national						
banks	\$18,694	\$19,145	\$19,91 <i>7</i>	\$23,255	\$27,461	\$34,411

	Delaw	are: Sta	tistical	Data (continued)		
		Table	V.—A	gricultu	re		
		(All figu	res in	thousan	ıds)		
	1937	19	39	1940	1942	1943	1945
Income from crops and livestock Leading crops (bu.):	\$19,20	0 \$17,	835	\$19,63	4 \$38,74	2 \$63,612	\$71,224
Apples	2,37		686	1,90			
Corn	4,14		176	3,94			
Hay (tons) Strawberries	8	3	91	10	1 9	3 101	109
(crates) Wheat	33 1,37		225 296	40 1,40			
				-	•	•	•
	1	able VI	.—Ма	nufactu	ring		
	(Money	figures	in tho	usands :	of dollars)		
	1939	1941	1	942	1943	1944	1945
Value of products \$ Leading products:	114,754		\$22	4,437	\$171,300	\$212,227	\$220,257
Chemicals	20,350			7,627	22,333	28,936	43,203
Shipbuilding		4,430		7,652	57,214	67,928	63,295
Foundries, etc Leather	12,741	13,509 9,710		8,760 7.470	35,454 8,510	12,337 34,449	33,603 11,502
Fibre		11,836		6,362	2,988	25,092	24,407
Textiles	8,111	12,801		5,641	35,070	35,899	35,603
Canning, etc		5,065	5	2,843	9,217	7,265	873
	Tab	le VII	-Miner	al Prod	luction		
					dollars)		
	(, ,	1937	1938			1943 19	44 1945
Value of mineral proc Leading products:	tuction	\$397	\$321	\$40	1 \$326	\$172 \$3	20 \$204
Clay Sand and gravel .	:::	47	128 63	186 62			

Delaware River Aqueduct

See AQUEDUCTS.

Delbos, Yvon

Delbos (1885-), French statesman, was educated at the Ecole Normale in Paris. After completing his studies, he entered journalism, founding the Radical-Socialist newspaper, L'Ere Nouvelle. Elected on the Radical-Socialist ticket as deputy for the Dordogne department in 1924, he subsequently held a number of cabinet posts in the government. He was foreign minister in Léon Blum's government, 1936-37, and the succeeding Chautemps cabinet, 1937-38. The keystone of Delbos' policy was Anglo-French amity, and he frequently stressed its necessity. Delbos, who was minister of education when Reynaud reorganized his cabinet, June 5, 1940, bitterly assailed the rampant "defeatism" prevailing in the Reynaud government; he maintained that France could still carry on the war with her fleet and from the African colonies. One of the ministers in the Pétain government that opposed the armistice, he was arrested in 1943 and sent to a prison camp in Germany. He was freed in 1945 by Allied armies.

Dementia Praecox

See MEDICINE; PSYCHIATRY.

Demobilization

See Compulsory Service, British; Selective Service, U.S.

Democracy

Few political concepts were as much discussed, attacked and differently interpreted during the ten eventful years 1937-46 as the concept of democracy. Democracy may mean verbatim "the rule of the people," meaning the rule of the majority. In that sense the totalitarian governments, both communist and fascist, could claim, and did claim, to be "true" democracies. Their governments proved by almost unanimous plebiscites that they truly represented not only the will of the majority but the will of such an overwhelming majority that it amounted almost to the totality of the people.

Democracy, as it developed in 17th century England,

in 18th century France and above all in the United States, and as it was recognized everywhere in the 19th century, implies two indispensable elements: as a technique of government it is based upon freely elected representative institutions in which the opposition is unfettered and accepted as a constructive element, and decisions are arrived at by discussion and compromise; and in its fundamental assumption it is based upon the liberty of all individuals, including above all the freedom of thought and expression, and an attitude of mutual tolerance. The totalitarian governments of the 20th century rejected these two indispensable elements of democracy. They regarded democracy as a hypocritical pretense devised in the interests of certain classes or nations. At the same time they regarded democracy as unable to cope with the complexities of 20th century life. They were convinced that democracy was doomed, and that its methods were obsolete and its adherents decadent. They expected that democracy would perish by its own inner tensions, discords and conflicts. They opposed to it the alleged harmony of a monolithic society in which class or racial conflicts were eliminated and which was held together by an allegiance to only one class or only one race. While the democratic states were in theory above class or race, the totalitarian states in theory identified the state with one class or one

At the end of World War I democracy seemed to gain everywhere, except in the U.S.S.R., where Lenin's revolution of Nov. 1917 had established the first totalitarian regime. Even in Germany and throughout central Europe democratic republics replaced conservative monarchies. Japan, under the influence of the general trend, made definite progress toward democracy after 1918. But in Italy fascism under Benito Mussolini established between 1922 and 1926 another totalitarian regime which rejected democracy. By the beginning of the '30s, fascist regimes were established in several other countries, especially in Germany. Under their influence, other nations began to waver between democracy and fascism. By their self-confidence, aggressiveness, military preparations and controlled public opinion, totalitarian powers seemed superior to the democracies, the totalitarian methods more efficient than democ-

Democracy Disunited.—The democratic powers lost especially in the international field. Totalitarianism was encouraged by its successes, which were due to a large degree not only to the peaceful character of the democratic peoples but above all to the unwillingness of the democracies to co-operate in face of a threat to all democracy. After World War I, each democracy had thought only of itself and its own supposed interests. Great Britain and France no longer stood together; the U.S. retreated into an attitude of isolation and recrimination. Thus the democracies had to face again the challenge of an authoritarian bloc based upon unity achieved at the price of freedom. The reluctance of the democracies to establish a close co-operation or a union of the democracies endangered not only the national security of each democracy but also the cause of freedom and human worth everywhere. Britain and France found the unity of their strategic interests and predominant way of life only in the moment of supreme danger, too late to save France and almost too late to guarantee Britain's survival.

In that situation in June 1940, the British government submitted to the French an official proposal for a union of the two democracies. "At this most fateful moment in the

history of the modern world," the proposed declaration read, "the governments of the United Kingdom and the French Republic make this declaration of indissoluble union and unyielding resolution in their common defense of justice and freedom, against subjection to a system which reduces mankind to a life of robots and slaves. The two governments declare that France and Britain shall no longer be two nations but one Franco-British union. The constitution of the union will provide for joint organs of defense, foreign, financial, and economic policies. Every citizen of France will enjoy immediately citizenship of Great Britain, every British subject will become a citizen of France." This proposal was rejected by the French cabinet by a very slight majority.

In the pursuance of World War II, victory for the democracies was made possible by the close co-operation, amounting almost to a union in strategic and economic affairs, between the U.S. and Britain. Such a unity had never been achieved during World War I, not even in its last and most critical stage. It was the deep understanding of the U.S. general, Dwight D. Eisenhower, commander in chief of the armies of the democratic allies, for the need of unity among the democratic nations, based upon a common tradition, which made them such a powerful instrument for victory.

Yet in 1939-41 the fascist nations were confident of victory. They had prepared for the war for a long time and they had mobilized all their resources for waging it. They had placed "guns before butter" and had ridiculed the softness and liberties of the democracies. Russia under its totalitarian regime, fearful of war and distrustful of the outside world, had also been prepared militarily and psychologically for the possibility of approaching conflict for many years. Russia was supported in it by the immensity of its territory, the vast numbers of its population and the abundance of its resources. The democracies, on the other hand, were in 1939-41 prepared neither materially nor psychologically. The democratic peoples did not expect war; in fact they believed it impossible and inadmissible. Their economic life was entirely governed by the requirements of "butter before guns." In spite of this material and psychological unpreparedness, the democracies were able to stand the test of the ten eventful years.

In the material realm they were able, both in Britain and in the U.S., to create mighty armaments, equal in quality to the best produced in the totalitarian countries, where for many years many gifted brains had given their full attention to military science and technology. The quantity of output was so great that the two countries could supply Russia with many thousands of tanks and planes and vast amounts of various equipment. In the psychological realm democracy showed an astonishing resilience and unity. Neither in Britain nor in the U.S. did the nondemocratic elements-the fascists and, during the period of German-Russian friendship, the communistsseriously hamper the war effort or its preparation. Before 1939 the enemies of democracy and some of its pusillanimous friends had expressed expectation that in case of war democracy would be unable to maintain the civil and political liberties and would turn totalitarian. Nothing of that kind happened. On the contrary, the war effort invigorated the democratic consciousness and made it more vigilant.

In Britain and in the U.S. all the constitutional liberties were maintained during the war. The British house of commons, the mother of parliamentarianism and democ-



Democracy defined in terms of baseball, by George Clark of News Syndicate Co. Inc. The private to the captain: "Whatta ya mean, he's out? He was safe a mile!"

racy, continued to direct national existence and express the will of the people during the most tragic and trying hours of World War II. The rights of minorities and the freedom of opinion and expression remained safeguarded. This example strengthened and inspired democratic elements everywhere. On the whole, the totalitarian attacks against democracy led to a reappraisal and a reassertion of the fundamental attitudes and values inherent in the democratic position.

Two Small Lights.—In 1940 only two democracies remained on the European continent, Sweden and Switzerland. The seemingly overwhelming power of the totalitarian bloc in no way dimmed the democratic spirit in these two countries. The parliamentary elections held in Sweden on Sept. 15, 1940, brought that out clearly. In spite of the fact that a few months before, the two neighbouring Scandinavian nations, Norway and Denmark, had been occupied by Germany, and Finland had been defeated by Russia, the elections in Sweden proved a definite trend toward stronger democracy, even if compared with the last preceding election in 1936. The Swedish National Socialists, who in 1936 had received 26,750 votes, too few to gain a seat, did not participate at all in the 1940 elections. The Swedish Communists got only three instead of the five seats gained in 1936, while the largest democratic party, the Social Democrats, achieved for the first time the absolute majority in the Swedish parliament. In Switzerland an interesting indication of the strength of democracy was afforded in the general protest movement in parliament, in the press and among the people against the audience which the federal president had granted to the representatives of the "National movement," a Swiss National Socialist group. During 1942 the German propaganda minister had to protest again and again at the outspoken democratic sympathies of the Swiss and the Swedish

press, at a time when both countries were surrounded on all sides by the triumphant power of National Socialist Germany.

In 1943 the Danish people, though under German occupation for almost three years, gave a smashing demonstration for democracy in the parliamentary elections of March. More than 90% of the electorate voted, and the five democratic parties polled 362,000 more votes than in the elections of 1939. The greatest gain was shown by the Social Democrats, the strongest single party, and by the Conservative party, whose political leader and spokesman was then in Britain leading the fight against Germany. The two nondemocratic parties, the Danish National Socialist and the Farmer's party, received together only 68,000 votes out of a total of almost 2,000,000. Similar was the outcome of the elections in Switzerland in the fall of 1943. They brought a great gain to the Social Democrats, who for the first time became the strongest political party in the National council, having almost 25% more seats than in 1939. The two leading fascist organizations in Switzerland, the Nationale Gemeinschaft Schaffhausen and the Rassemblement Fédéral, were dissolved in July 1943 and their newspapers suppressed.

Of even greater importance as an indication of a swelling world-trend in favour of democracy were the elections held in July 1943 in the Union of South Africa. The democratic parties, which had supported the war from the beginning, received under the leadership of Field Marshal Jan Christiaan Smuts 107 seats while the profascist opposition, which had opposed South Africa's participation in World War II, received only 43 seats. While the democratic and prowar parties in the preceding parliament had a majority of only 18, they gained a majority of 64 in 1943. All cabinet ministers were re-elected, some with record majorities. The number of voters was unusually large.

Effect of the Axis' Destruction.—The collapse of fascism in Italy and the ignominious defeat of the Italian armies and havies, in spite of the Italian boasts about the newly acquired military efficiency and heroic attitude, and the victories of the democratic armies and of the soviet union further increased the prestige of democracy. At the same time the successful struggle of communist Russia paved the way for a spread of communist influence far beyond Russia's borders. The elections held in Sweden in 1944 bore out the trend. The Social Democratic party retained undisputed control of the lower house with 115 seats, though it lost several seats, as did the second largest party, the Conservative. These seats were gained by the Communists, who were in 1944 holding 15 seats instead of 3, the Agrarians and the People's party. The increased prestige of democracy was also seen in the praise bestowed upon democracy even by nondemocratic countries. Everywhere outside the fascist lands, democracy was recognized at least as a desirable goal. That was also the case in the soviet union and in China. Generalissimo Chiang Kaishek promised the introduction of constitutional liberties in China won during the war. In Brazil, President Getulio Vargas told a press conference on April 15, 1944, that after World War II, in which the Brazilians took an active part on the side of the United Nations, the Brazilian people would have the opportunity to choose their own democratic representative government. After 20 years during which, under incessant attacks from communism and fascism, the prestige of democracy was falling, the year 1944 witnessed everywhere a new rise in the appreciation of the results and benefits of the democratic way of life.

After the expulsion of the Germans in 1944-45, civil

liberties, equality of all before the law, and a due regard for objective justice were quickly re-established in the countries of western and northern Europe. In France, Belgium, the Netherlands, Luxembourg, Norway and Denmark the democratic institutions were again functioning in 1945. Greece enjoyed liberty of press and of assembly by the end of the year and in the elections of spring 1946 full freedom was assured by international democratic supervision.

Wherever such freedom of elections was assured and opposition candidates could present themselves at the polls, the elections confirmed everywhere the trend away from totalitarianism to democracy. This was the more remarkable because all these countries suffered from an unprecedented economic misery and from much administrative chaos in the wake of the long years of war.

Free elections in which opposition parties were represented were held in 1945 on the European continent in France, Luxembourg, Norway, Denmark, Finland, Austria and Hungary. In Norway and in Denmark, as in Great Britain, the moderate Socialist or Labour parties gained the strongest representation; in Norway the Labour party received the absolute majority and formed the government; in Denmark the bourgeois parties of the centre and the right received 83 seats against 47 for the Social Democrats and 18 for the Communists. In Luxembourg the Catholic party received most of the votes; together with the Social Democrats they had 34 out of 51 seats and formed the government. In Finland the bourgeois parties received about half the votes, the Social Democrats onefourth, and the Communists one-fourth. The same proportion prevailed in France, where the Communists, the Socialists and the Catholic Republicans (Mouvement Républicain Populaire) emerged as the three strongest parties.

In Austria and in Hungary the Catholic Agrarian parties received a clear majority of the votes and seats while the Communists lost heavily, especially in Austria. On the whole, the trend on the continent of Europe, wherever full freedom of expression and election existed, went to the two democratic parties of the centre, the Progressive Catholics and the Social Democrats.

In Britain the Labour party received 393 out of the 640 seats in the house of commons. The popular vote was not so overwhelmingly Labour as the distribution of the seats might suggest. Labour received 11,962,678 votes, the Conservatives 9,018,235 and the Liberals 2,280,135 votes. The extreme parties of the left made a very poor showing: Commonwealth received one seat and the Communists two seats, a gain of one.

The elections of 1946 in Europe, the principal battleground for democracy against totalitarianism, showed on the whole that there were three tendencies on the continent (outside Britain). To the extreme left were the Communists while among the democratic parties the Social Democrats and the Leftist Catholics predominated. In Belgium and the Netherlands, however, communism was weaker than in other continental countries, and the conservative parties strong. Elections were held for the Belgian chamber of deputies on Feb. 17. Of the 202 mandates of the chamber, go went to the Catholic party (as against 72 at the time of the dissolution of the preceding Chamber), 69 to the Social Democrats (as against 63), 24 to the Communists (as against 9), 18 to the Liberals (as against 31) and 1 to smaller groups (as against 5). In the Netherlands, elections were held on May 17 for the states general, the lower chamber, and on May 29 for

the upper house. Of the 100 seats in the lower house the Catholics received 32 seats (1,466,510 votes), Labour 29 (1,347,664), the Protestant parties 23 (1,121,153), the Communists 10 (502,935), the Liberals 6 (305,935). In the upper house the 50 seats were distributed in a similar way: Catholics 17, Labour 14, Protestants 12, Communists 4 and Liberals 3. In France the draft of the new constitution sponsored by the Communists and Socialists was rejected by the electorate in a referendum. In the elections for a new constituent assembly the Catholic party (the Popular Republican movement) emerged as the strongest single party and thus took the place which in the preceding elections the Communists had achieved. It was followed by the Communists, the Socialists, and finally the Liberal groups, which this time showed somewhat greater strength than in the preceding elections. This position was reversed in the elections of Nov. 1946 out of which the Communists emerged as the stronger single party followed by the Catholic Republicans. The Liberal parties also increased their strength.

Of great interest were the elections in Czechoslovakia at the end of May 1945. The Communists showed greater strength than in any other country with free elections. They received 2,695,915 votes or 38% of the total votes cast and 114 seats in an assembly of 300. Only in Slovakia, the eastern part of Czechoslovakia, did the Communists emerge as the second strongest party, preceded by the Slovak Democrats, who received 988,275 votes and 43 seats. The Czech Socialist party received 1,298,917 votes and 55 seats; the Catholic Peoples party 1,110,920 votes and 47 seats; the Social Democrats 855,771 votes and 36 seats.

In 1946 the first elections were held in the former fascist countries. In Italy the elections confirmed the Catholic party as the strongest single party. A referendum held at the same time resulted in a majority for a republican constitution for Italy and the end of the monarchy. In Germany the elections resulted in a victory for the Social Democrats and the Christian Democratic Union. Definite progress toward democracy was made in Japan and in the new Japanese constitution.

(See also Communism; Elections; Fascism; Minorities; Women, Freedom of.)

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Democratic Party

The Democratic party marched up the U.S. political hill and down again in the period from 1937 through 1946. Its history during that decade was, in reality, the drama of one man. Rarely, if ever, had so attractive an actor as Franklin D. Roosevelt appeared on the U.S. stage. He attracted to his standard many elements which had shown scant interest in public affairs or which had usually aligned themselves with the Republican or minor party organizations.

When he died on April 12, 1945, to be succeeded in an hour of crisis by the far less dramatic and dynamic Harry

S. Truman of Missouri, the national organization which Roosevelt had thrown together and led to four presidential triumphs began to show signs of disintegration. Labour and liberal groups, as well as an estimated 10,000,000 independents, who had responded to his New Deal program and personality, deserted the Rooseveltless party.

The Dominance of Roosevelt.—With Roosevelt's reelection in 1936 by an electoral vote of 523 against only 8 for Alf Landon of Kansas, the Republican nominee who carried only Maine and Vermont, the Democrats enjoyed overwhelming control of the federal government, with the sole exception of the supreme court of the United States. The popular tally was 27,474,872 for Roosevelt and 16,679,983 for Landon.

The Democrats had such topheavy representation in house and senate in Jan. 1937 that majority members had to sit on the Republican side of the aisles dividing the national chambers. The G.O.P. had only 89 house members, 17 senators and 8 governors. Almost every city with a population of more than 100,000 was in Democratic hands. This almost unprecedented domination of the U.S. political scene was a tribute to Roosevelt's astuteness and appeal as well as to the organizing ability of James A. Farley of New York, his campaign manager as Democratic national chairman.

The sweep of Roosevelt's 1936 triumph had a definite effect upon him and his conduct of the government, especially in his relations with congress. He showed his elation even before the votes were cast. In his final campaign speech at Madison Square Garden on the Saturday night before election day, he warned that the forces of reaction would meet "their master in my second term."

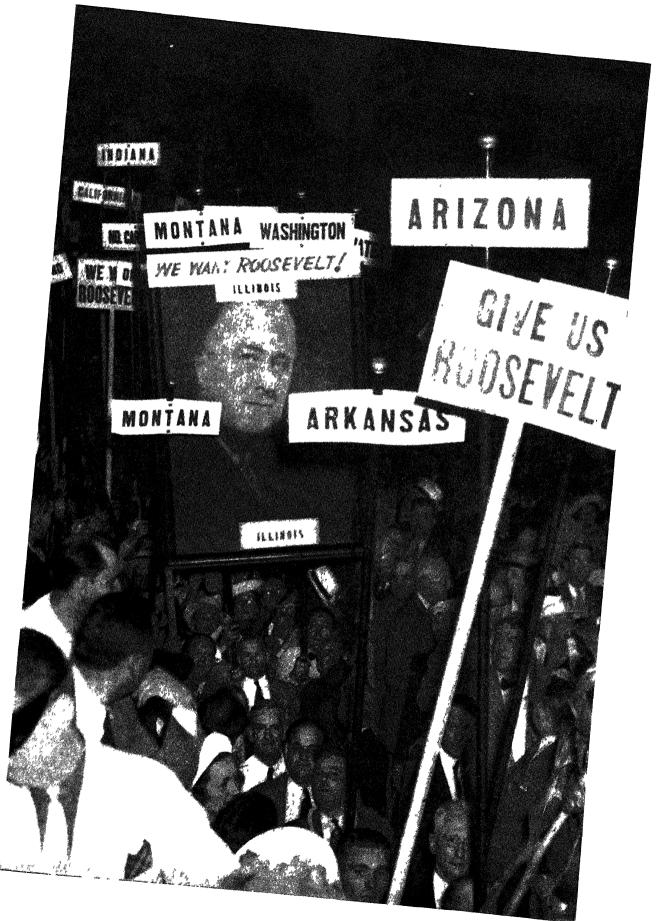
He soon exhibited his meaning. In Feb. 1937 he advanced a unique proposal for "packing" the supreme court by the addition of 6 members and a provision for retirement on pension of all federal jurists after serving 10 years and reaching the age of 70.

Democratic liberals and Republicans joined with Republicans in attacking this judicial reform. It never came to a formal vote in house or senate, and Roosevelt reluctantly withdrew it, although never admitting any error on his part. The retirement-pension feature was approved by congress, and it eventually contributed to the voluntary resignation of several elderly members who had voted to "kill" major Rooseveltian reforms, notably the National Recovery Act (NRA) and the Agricultural Adjustment Administration (AAA).

The president also tried to force through a federal wage-and-hour bill to replace the outlawed NRA, but congress refused to pass it. The legislators, with many Democrats voting against the White House, also blocked enactment of a measure authorizing the president to reorganize executive departments.

Presidential influence on Capitol Hill suffered from the death in July 1937 of Senate Majority Leader Joseph T. Robinson of Arkansas, an able and loyal administration spokesman. He was succeeded by Senator Alben W. Barkley of Kentucky, who enjoyed White House support in a leadership contest against Pat Harrison, a Mississippi veteran.

Reminiscent of his warning that he would be "master" in his second term, President Roosevelt sponsored a purge of Democratic legislators who had fought the more "liberal" of his proposed reforms. Marked by the White



House for defeat in the 1938 primaries were senators Walter F. George of Georgia, Ellison D. Smith of South Carolina, Millard Tydings of Maryland, Frederick Van Nuys of Indiana, Guy M. Gillette of Iowa and Alva B. Adams of Colorado. The only house member on the black list was Rep. John J. O'Connor of Manhattan, chairman of the rules committee, where many administration measures had been shelved. All save O'Connor, who won the Republican nomination but was defeated in the election, were renominated and re-elected.

In the elections of Nov. 8, 1938, the Democrats lost 8 seats in the senate, 81 in the house and many state and local offices, including 10 governorships. When congress convened in Jan. 1939, the Democrats had 69 senators and 262 house seats, a comfortable majority but less than the 75 and 333 who had represented the party in the upper and lower bodies, respectively.

The slight conservative trend evident in the 1938 contests, together with the politicians' resentment against the purge, was reflected immediately on Capitol Hill. With approximately 60 southerners siding with the Republicans, the legislators blocked major spending and public works measures, passed an emaciated government reorganization bill unsatisfactory to the White House and rejected a request for extension of the president's monetary control powers.

President Roosevelt called the legislators into special session on Sept. 13, 1939, within 13 days after Hitler's attack on Poland. With only a few dissenters, they passed a huge national defense program and repealed the Arms Neutrality law. For it, amidst sharp charges that "the President is leading us into war," they substituted a "cash and carry" system that favoured the Allies for the reason that only those nations could obtain the goods because of England's control of the seas.

Preoccupation with War.—The outbreak of World War II in Europe had a definite effect on the pattern of U.S. politics, as well as on Roosevelt's policies and strategy. Noting the slow growth of conservatism on domestic questions, the president abandoned controversial reforms to devote himself almost wholly to problems of war and foreign affairs. He set out to "rearm America" so that, as he said, the country would not become involved in the world-wide conflict. He assumed quickly and easily the role of commander in chief.

When the Democratic national convention assembled at Chicago on July 16, 1940, President Roosevelt's plans for a third term were apparently unknown. Indeed, Vice-President John Nance Garner of Texas and James A. Farley of New York, then Democratic national chairman and postmaster general, permitted their names to go before the convention. But the delegates suspected that Roosevelt was willing to run again, and they nominated him for a third term on the first ballot. Henry A. Wallace, then secretary of agriculture, was Roosevelt's own choice for vice-president, and despite some grumbling among regular Democratic leaders, the former Republican from Iowa was chosen. Farley resigned as national chairman in Aug. in a protest against the third-term try, and Roosevelt named Edward J. Flynn of New York, an oldtime friend, as his successor.

On Nov. 5, President Roosevelt was re-elected by 449 electoral votes to 82 for the Republican candidate, Wendell L. Willkie. The popular count was 27,243,466 for Roosevelt and 22,304,755 for Willkie. A tremendous turnout for the president in industrial districts, where employ-

ment and wages were reaching new highs, was chiefly responsible for his victory.

Entering the first war year of 1941, the Democrats continued in solid control of the legislative branch. Although losing 5 senate seats in the 1940 elections, and 7 in the house, their strength in the 2 chambers was, respectively, 66 and 267 seats. With the war engulfing 3 continents and moving ominously toward the western hemisphere through naval engagements between the belligerents, Roosevelt announced his determination to transform the United States into an "arsenal of democracy." On March 11, 1941, he obtained passage of the lend-lease bill. This arrangement permitted the Allies to buy munitions in the U.S. on credit and allowed their shipment overseas in U.S. vessels. Only 15 senate Democrats and 53 house Democrats voted in the negative.

He had more difficulty in persuading congress to extend the Selective Service bill, which had begun to provoke public resentment. It squeezed through the house in Aug. by the narrow margin of 203 to 202, with 182 Democrats and 21 Republicans voting in favour.

Partisan politics as they affected the conduct of the war were abandoned for the duration after Japan's bombing of Pearl Harbor on Dec. 7, 1941. Joseph W. Martin, Jr., of Massachusetts, Republican national chairman, and Flynn agreed upon complete co-operation in a Dec. 13 exchange of telegrams. Commenting on the arrangement, the Democratic national committee characterized it as "the most complete adjournment of domestic politics since the formation of the two-party system."

In view of this pact, Flynn incurred Republican wrath when he declared on Feb. 2, 1942: "No misfortune except a major military defeat could befall this country to the extent involved in the election of a congress hostile to the President." Roosevelt promptly softened that statement by explaining that what the country needed when at war was a congress which would support the government irrespective of party. In the 1942 congressional campaign he made no direct or general appeal for the election of Democrats.

On the ground that he was a resident of New York, Roosevelt intervened in that state. He announced his support of Senator James M. Mead for governor. This stand placed him in opposition to his old associate, Farley, who was backing Attorney General John J. Bennett. Although Bennett won the nomination, he was defeated by Thomas E. Dewey, the Republican candidate, by more than 600,000 votes.

Roosevelt encountered hardly any difficulty on Capitol Hill during 1942. The only administration measures meeting defeat were one empowering him to revise tariff and immigration statutes for the war period and another for outlawing state poll taxes. The latter proposal passed the house, but it was shelved in the senate by a filibuster of southern Democrats. All other measures, principally concerned with prosecuting the war, controlling the domestic economy and raising taxes, were enacted without serious opposition.

Setback.—Reflecting growing popular dissatisfaction with the administration's conduct of the war, as well as unrest over domestic irritations, the off year elections on Nov. 8, 1942, reduced Democratic strength in congress to its lowest point since Roosevelt had become president. The majority opened 1943 with only 57 senators and 222 seats in the house, an alignment that left it with only nominal control. Most of its losses were sustained in the agricultural states of the middle west.

Serious and numerous factional disputes marked the

legislative sessions in the 1943–44 period. Recalcitrance reached a new peak after a July-August recess among the home folks. Members found their constituents chiefly critical of "bureaucrats" management of emergency controls, especially the Office of Price Administration, huge expenditures and rising taxes and alleged coddling of labour. As 1943 ended, 40 to 60 southern Democrats were voting almost regularly with the Republicans on matters that did not relate to prosecution of military operations against the axis.

Flynn resigned as Democratic national chairman in Jan. 1943. He was subsequently named minister to Australia, but he asked the president to withdraw his name when it appeared that he could not be confirmed. It was generally believed that certain rebellious senators used the Flynn nomination as a means of expressing their growing irritation toward the White House. Postmaster General Frank C. Walker of Pennsylvania succeeded Flynn in the political post.

The year 1944 brought a virtual end to the political truce between the two major parties as they squared off for their first presidential joust in wartime. With Allied forces winning major victories on both European and Pacific fronts, restraints imposed during darker days were relaxed.

As in 1940, President Roosevelt gave no public sign that he would accept renomination for a fourth term. But Democrats, as well as the general public, took it for granted that he would run again. He was nominated on the first ballot at Chicago. He delivered his acceptance speech from the San Diego, Calif., naval base, explaining that he remained in public life against his own preference for retirement, and only because of the world crisis.

The surprise of the Democratic convention was the substitution of Senator Harry S. Truman of Missouri for Henry A. Wallace of Iowa as the vice-presidential nominee. Roosevelt expressed a mild preference for Wallace, but when the "big city" bosses—Flynn of New York, Frank Hague of New Jersey and Edward Kelly of Chicago—warned that the Iowan's "radical" views would alienate voters in their areas, Roosevelt gave the nod to Truman and to supreme court Justice William O. Douglas of Oregon. The delegates picked Truman.

He owed his selection largely to the efforts of Robert E. Hannegan, a fellow Missourian from St. Louis. Hannegan had succeeded Walker as national chairman in Jan. 1944, and he began at once to lay plans for making Truman the second man on the 1944 ticket.

President Roosevelt defeated the Republican nominee, Governor Thomas E. Dewey of New York, by an electoral tally of 432 for Roosevelt to 99 for Dewey. The popular vote was 25,602,646 against 22,017,592. The New York governor, however, proved to be the strongest opponent the president had met in a national contest.

In the congressional contests the Democrats gained 21 house seats and lost only 1 in the senate. They also won back the governorships of Ohio, Massachusetts, Missouri, Idaho and Washington. The opening of congress in Jan. 1945 found 57 Democrats in the senate and 243 in the house, as against 38 and 190 Republicans, respectively. There was 1 Progressive, Robert M. La Follette, Jr., of Wisconsin, in the upper chamber, and 2 members of minority parties in the house.

Although most of the legislation before the 79th congress consisted of noncontroversial measures dealing with postwar reconversion and demobilization, the Democrats managed to continue their bickering among themselves and with the White House. President Roosevelt con-

tributed his part to the intraparty duel; he buried himself so completely in naval, military and diplomatic problems that he lost touch with his leaders on Capitol Hill.

Revision of the revenue laws to simplify complexities precipitated the most bitter row between White House and congress since the 1937 supreme court struggle. In vetoing the measure because it provided only \$2,000,000,ooo instead of the requested \$10,000,000,000 in additional receipts, the president made a sharp comment on congressional inadequacy which stung the normally mild and loyal Alben W. Barkley of Kentucky, senate majority leader. In an angry retort, he declared that Roosevelt's estimate of prospective revenue had been prepared for him "by a mind more clever than honest," a not too subtle dig at Roosevelt's new crop of wartime advisers. Barkley resigned his leadership, but the special party caucus reelected him unanimously. The bill was passed over the veto and Roosevelt hastened to repair the breach by friendly advances to the amiable Kentuckian.

Another revolt against the White House was staged toward the end of the session by an odd assortment of Democratic liberals and conservative Republicans, when they objected to confirmation of several Roosevelt appointees to the reorganized state department. Such thick-and-thin supporters as Senators Joseph F. Guffey of Pennsylvania and Claude Pepper of Florida opposed Will L. Clayton, wealthy Texas cotton broker, for assistant secretary of state because they considered him a "reactionary." The G.O.P. members attacked Archibald MacLeish, poet of "social significance" and then librarian of congress, for a similar post because he was deemed a "radical." Both men were confirmed.

Truman's Succession.—The Democrats at Washington shifted from a warmaking to a peacemaking and reconversion program throughout most of 1945, with the defeat of Germany in May of that year and of Japan in August. They promptly discovered that postwar problems presented greater and more varied difficulties, politically, than defeating external foes. As the year ended, international differences and partisan divisions suppressed during the conflict beset Harry S. Truman, who succeeded President Roosevelt upon the latter's death on April 12, 1945.

Labour strife swept the nation, based on demands for higher wages, the release of federal controls and Truman's own statement that industry could absorb these extra costs without increasing prices. The administration's eventual approval of wage boosts averaging 18½ cents an hour, which resulted in general price inflation, sharpened public resentment by causing shortages and higher prices of commodities.

The prolonged legislative stalemate between White House and Capitol Hill gave deep concern to Democratic strategists, who conceded that the administration's apparent lack of accomplishments since V-J day, especially the failure to accelerate and promote orderly reconversion, might affect adversely their fortunes at the polls.

President Truman enjoyed a brief honeymoon because of the tragic circumstances under which he assumed office, but the old alliance between southern Democrats and reactionary Republicans was revived when he submitted his first legislative message to congress. Whereas they had expected him to lean toward the conservative side, he showed himself to be quite as "New Dealish" as his predecessor. They smothered in committee or defeated on the floor almost all his social and economic proposals.

The exasperated President Truman, whose friendliness and good nature had won him many friends when he served in the senate, eventually indulged in biting criticism of his erstwhile colleagues. On the radio and at press conferences he accused them of "letting him down" and of "stalling" on his recommended postwar program. His indictment did not improve relations, and his own leaders rebelled.

National Chairman Hannegan was especially disturbed by the legislators' refusal to approve "must" measures dealing with labour, economic and social welfare problems. He feared that congressional indifference and any evidence of presidential futility would alienate the conglomerate elements which had composed the Roosevelt New Deal party.

These fears were soon realized. Truman's inability to persuade or force congress to enact these reforms, his own proposal for a 30-day cooling-off period before calling of a strike, and certain prominent Democrats' antagonism toward unions produced the first break between a Democratic president and the Congress of Industrial Organizations in a decade. Philip Murray, C.I.O. president, characterized Truman as an "enemy of labor." John L. Lewis, head of the United Mine Workers, was even more caustic.

Subsequently, when the chief executive asked congress to pass a bill permitting him to "draft" trainmen in order to prevent a railroad strike, A. F. Whitney, head of the trainmen's brotherhood, vowed that he would spend all the money in his organization's treasury to defeat Mr. Truman if he sought re-election in 1948.

The Democratic leadership on Capitol Hill underwent a few changes when Truman quit the vice-presidency. Senator Kenneth McKellar of Tennessee was elected president pro tem of the senate. Senator Barkley of Kentucky remained as majority leader with Senator Lister Hill of Alabama as his assistant. Sam Rayburn of Texas continued as speaker of the house, with Rep. John W. McCormack of Massachusetts as floor leader. Rep. John J. Sparkman of Alabama was named as McCormack's aide.

Deaths, defeats and resignations in 1945 lowered the Democratic membership in both bodies. In the senate their number dropped from 57 to 56, while the Republicans increased from 38 to 39. The Progressives had 1 seat—Robert M. LaFollette Jr. of Wisconsin. In the house the majority lost 7 places, slipping from 243 to 236. The Republicans climbed from 190 to 192. There were 2 members of minority parties—1 Progressive and 1 American Labor—and 1 vacancy.

Battalions of Trouble.—Cabinet friction and resignations, Communist opposition from Moscow and fellow travelers in the U.S., strikes, rising prices, shortages of everyday goods, intraparty dissension—descended upon the Democrats in threatening panoply throughout 1946. Even his friends began to refer to the man in the White House as "poor Harry Truman."

When the president named Edwin W. Pauley, a California oil man, to be undersecretary of the navy, gruff Harold L. Ickes bluntly told the senate judiciary committee that Pauley had promised to collect more generous campaign funds if the secretary of interior dropped the government's suit to obtain jurisdiction over tideland oil property off the west coast. After an exchange of recriminations with Truman, Ickes resigned and became one of the administration's sharpest critics.

When Henry A. Wallace was asked to resign in Sept. 1946 as secretary of commerce, only one Roosevelt ap-



"Carrying Out the Roosevelt Policies." Darling of the New York Herald Tribune referred to the almost complete change in cabinet personnel under President Truman in 1945

pointee remained in the Truman cabinet—James V. Forrestal, secretary of the navy. Wallace was forced out because he expressed open and violent criticism of the Truman-Byrnes policy toward an increasingly recalcitrant Russia, which refused, in Washington's opinion, to honour pledges that Stalin had signed at Yalta, Tehran and Potsdam. Public reaction was extremely adverse to the Wallace viewpoint, and after a few days of hesitancy Truman dismissed him. Like Ickes, he became a frequent and vocal objector to the Truman program.

Numerous other Roosevelt followers—New Dealers, liberals, labour organizations and radicals—lined up against Truman, complaining that he had abandoned his predecessor's domestic and foreign policies. They also assailed many of his major appointments, insisting that they represented the ultraconservative wing of the party. Among those who fell away were James and Elliot Roosevelt, Henry Morgenthau, Fiorello H. La Guardia, and even Mrs. Eleanor Roosevelt now and then.

Strikes and work stoppages in the early spring of 1946 had an unfavourable effect on Democratic fortunes. They slowed down reconversion, caused scarcities of everyday goods and started a slow spiral of price inflation. Public discontent grew apace. A Gallup poll in early Oct. 1946, when the full force of delayed recovery had been felt by consumers, showed that Truman's popularity had fallen to 33% from the 87% high it had registered upon his entrance into the White House 18 months earlier.

As reflecting Truman's loss of favour, there sprang up throughout the nation many good-natured but sarcastic quips, to wit: "The Democrats' slogan should be 'two families in every garage'" (a reference to the housing shortage); "Haven't you had enough? Vote Republican"; "For horse sense, vote Republican. For horse meat, vote Democratic" (a reaction to the meat famine); "Hoover

promised us 'two chickens in every pot,' but Truman put them there."

Truman did not appeal for election of a Democratic congress, and took hardly any part in the congressional campaign. He did, however, sponsor an old-fashioned purge of Representative Roger C. Slaughter of the 5th Missouri district because of the latter's opposition to administration measures. Slaughter was defeated.

Price control and allied problems gave the Democrats their greatest difficulty in years. After an OPA-less period imposed by congress during July and August, federal ceilings were reinstated by Truman on Sept. 1. There followed a more severe shortage of meat and other foods than had prevailed even during the war. The president's own advisers urged him to intervene. For a few days he wavered, but he lifted the controls on meat and livestock on Oct. 14. On Nov. 9 he removed federal controls from all foods and beverages except sugar, syrups and rice.

In abandoning these forms of regimentation, and in adopting a more firm attitude toward Russia, President Truman had scrapped the major surviving features of the "Roosevelt New Deal," in the opinion of Roosevelt's friends and most neutral observers. It was generally believed that he and his advisers were seeking to respond to the more conservative spirit which swept the nation in the wake of depression, World War II and the slow, painful convalescence.

Rout.—Thus it was in a restless, critical and questioning mood that the voters went to the polls on Nov. 5, 1946, in the first major political test since the end of the war and President Truman's occupancy of the White House.

When the ballots were counted on election evening, it was plain that the people had "had enough" of more than 13 years of Democratic rule. The Republicans had won their greatest victory since Herbert Hoover defeated Alfred E. Smith in 1928.

The G.O.P. had been expected to gain control of the house, but they captured the senate as well. They increased their house membership from 192 to 246, as against 188 for the Democrats and 1 American Labor party man. In the senate they added 12 seats, giving them 51 to 45 for the Democrats. They raised their total of governorships to 25.

Democratic losses extended across the nation. They lost senate seats in Massachusetts, New York, Pennsylvania, Delaware, Ohio, Montana, Missouri, Utah and Washington. Of their 188 house members, only 72 came from outside the solid south and the border states.

A close survey of the returns showed that the great political organization built by Roosevelt had fallen apart, especially in the large cities which he had always carried. The reasons were obvious. The workers stayed away from the polls or voted Republican. Racial elements, alienated by the administration's earlier "appeasement" of Russia, and particularly by Truman's original endorsement of the Wallace speech, turned against the "ins." The Negroes returned to their old political homestead, disappointed at the failure of a Democratic congress to continue the Fair Employment Practices committee and abolish the poll tax. Liberals and independents, in the belief that Truman had abandoned New Deal principles, took little or no interest in the contest.

Subsequent polls by Dr. George Gallup and others showed that the Democratic slump began about mid-September, after the Truman-Wallace-Byrnes mixup, and gathered greater momentum after the president removed meat price controls on Oct. 14. These two incidents placed Truman in the light of an indecisive chief executive. Many Democratic leaders declared that they would

have retained slender control of congress save for these mishaps.

So disastrous was the defeat that Senator J. William Fulbright, Arkansas Democrat, urged Truman to permit the Republicans to take immediate charge of the executive as well as the legislative branch of the government. He proposed that the president name a Republican as secretary of state and then resign in favour of the cabinet member. Fellow Democrats branded the idea as absurd and Truman took no formal notice of it.

The Democrats made a few changes in organizing their senate and house commands for the 80th congress. Senator Alben W. Barkley of Kentucky shifted from majority to minority leader, but Senator Lister Hill refused to continue as whip. He was replaced by Senator Scott W. Lucas of Illinois.

On the house side former Speaker Sam Rayburn of Texas moved down to become minority leader, and Representative John W. McCormack of Massachusetts was chosen as assistant minority leader.

Speculation immediately arose on whether Truman would be a candidate to succeed himself in 1948 or step aside, in view of the 1946 "repudiation." It was generally agreed that he could have another try if he insisted, but he gave no sign of his future plans.

His postelection moves suggested that he had diagnosed the main causes of the Democrats' downfall and that he sought to remedy them. For one thing, he promptly removed ceilings from all foods except sugar, syrups and rice and promised a general lifting of other controls. At the United Nations assembly session in New York, Secretary Byrnes adopted a firmer attitude toward Russia. And when John L. Lewis threatened a soft coal strike in late November, President Truman met the challenge and decided not to accede to Lewis' demands.

Harry Truman was fighting back with characteristic courage and determination. But observers noted, ironically, that it was the first time the Democrats had been on the defensive since they won the house in 1930—16 years. (See also United States.) (R. Tu.)

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DeMolay, The Order of

See Societies and Associations.

Dempsey, Sir Miles Christopher

Sir Miles Dempsey (1896-), British army officer, was born Dec. 15, 1896 in Cheshire, England. He left the Shrewsbury school during World War I to join the Royal Berkshire regiment in 1915 as a second lieutenant. He served in France, Belgium and Iraq. A brigadier at the outbreak of World War II, Dempsey participated in the rear-guard action which enabled the British to evacuate the bulk of their troops from Dunkirk in late May 1940. Later promoted to a lieutenant general, he commanded the 13th corps of the British 8th army that chased Rommel across North Africa in late 1942. He also commanded British ground forces in the invasion of Normandy in June 1944, for which he was knighted. Sir Miles led the British 2nd army which, with the Canadian 1st army, helped to cut off the escape route for German armies in the Netherlands. In the spring of 1945, Dempsey's army had advanced deep into north Germany when the war

ended. Subsequently he went to the far east to take over command of the British 14th army in Aug. 1945; later that year he assumed command of Allied ground forces in southeast Asia. In Dec. 1945, he conferred with British officials in Batavia on the Indonesian revolt.

Denmark

A monarchy of north central Europe, Denmark has an area of 16,575 sq. mi.; its population was estimated to be 3,844,312 in 1940. Capital: Copenhagen (700,465). Other principal cities: Aarhus (99,881); Odense (87,521); Aalborg (55,652). Religion: Lutheran Christian. Ruler throughout the decade 1937–46 (since 1912): King Christian X (q.v.).

Precarious Neutrality.—When King Christian of Denmark celebrated the 25th anniversary of his reign, on May 15, 1937, he could look back upon a period of sound material and cultural progress among his people. But dark clouds were looming ahead. Naziism naturally was disturbing to a small neighbour state possessing only scant means of defense. Strong bonds united the northern countries, but in a military way all were weak, and the idea of a defensive union was, as Thorvald Stauning, the Danish premier, remarked on March 18, 1937, utopian. The defense system of Denmark was revised in 1937, and the war material had been modestly improved, but not so the manpower. The added improvements of the following years likewise remained modest and were confined to equipments.

During the spring of 1939 Germany invited Denmark to enter into a pact of nonaggression; this resulted in a ten-year agreement signed on May 31. But within a year thereafter, Germany was to break its agreement.

When World War II broke out in Sept., 1939, Denmark made a declaration of neutrality, mobilized its forces and engaged in widespread laying of marine mines. The neutrality, however, was soon broken by a British bomber which had strayed from its course and bombed the port of Esbjerg. One woman was killed, seven persons wounded and several houses damaged. The following months were marked by hundreds of violations of Danish neutrality on the part of both groups of belligerents, most of them in the milder form of flights across Danish territory; the most serious was a German aerial attack upon a civil aeroplane headed for the Netherlands, on Sept. 26, 1939; one passenger was killed.

The difficulties of shipping were more serious. During the winter of 1939-40, 33 Danish vessels were sunk by mines and U-boat attacks; 362 Danish seafaring men were lost

Denmark attempted, although without great success, to improve its commercial relations with England and Germany during the early part of World War II. The lack of goods gradually became manifest, and unemployment increased. When the government chose to untie the krone from its sterling rate and fix its value at 5.18 by the dollar rate, the reorganization of Danish agricultural economics and the institution of state subvention became necessary. On the home market, in Sept.—Oct. 1939, strong restrictions were enforced. Automobile and railroad travel was restricted. Gas, electricity, sugar, coffee and tea were rationed, and maximum prices were fixed for grains. Simultaneously, large increases of direct and indirect taxes were ordered.

The winter war in Finland stirred the people greatly, and their sympathy was manifest in their support to that country through collection of money, clothing and food.

One Danish ambulance went to the front. Not only Danish soldiers but workmen registered for service by the thousands; and thousands of Danish homes opened their doors to the care of Finnish children.

The Nazi Attack.—After a few days of rumours and tension, Germany violated Denmark's neutrality on April 9, 1940.

The Danish government had been warned by the Berlin embassy on April 4, reporting preparations for shipping of German troops. But the Danish government trusted the promises of Germany; the military authorities had demanded mobilization of the army, but the government refused.

The occupation took the form of a surprise attack. Even before the German ambassador, Cecil von Renthe-Fink, had delivered his ultimatum at 4:20 A.M., masses of German troops crossed the borders or were landed in Danish seaports. The ambassador's statement said that Germany had occupied Denmark in order to prevent the western powers from "turning the country into a battle area," and that "Germany does not intend now or in the future to interfere with the territorial integrity or with the political independence of Denmark."

In the early morning hours the king and the leading members of the government assembled at Amalienborg castle. While German bombing planes coursed above and the royal guard clashed with German troops, it was decided to give up armed resistance. Before this order was received by the defenders at the borders, the guard had resisted the overwhelming invasion for several hours.

Before nightfall the country was in a state of occupation; railroads, radio and the public press were under the control of the Germans. The government's proclamation to the people stated: "It is the duty of the people to abstain from any resistance. The government will attempt to prevent the terrors of war from reaching the Danish people and their land, and therefore ask the people to maintain a quiet and reserved attitude toward the conditions now existing. Order must rule the country, and a loyal disposition must be shown toward everybody exercising authority."

To this the king added: "I exhort one and all, in our towns and outside, to conduct themselves correctly and properly, because any thoughtless act or utterance may have the most serious consequences. God preserve all of you; God preserve Denmark."

A general blackout was organized at once; the exchange was closed and the sale of alcoholic liquors was stopped. Everything was done quietly; the people were prostrated by the events which everybody considered likely to be temporary.

The legislature, meeting in the evening, silently accepted the decisions of the government. Later, a strong critical attitude developed. All parties understood that every internal political difference now should be disregarded. This found expression in the election to government posts of representatives of opposition parties, Lefts and Conservatives, on the very next day. The government until then had consisted only of Radicals and Social Democrats. Beyond these party lines were only the Communists and a strongly radical farmer group, and a small party of nazis. Of greater significance were some large industrial groups which had no confidence in the politicians; for several months they made unsuccessful attempts to produce an interest in a government composed of professional people.

The German army, under Gen. Leonard Kaupitsch, fortified its position in Denmark. Large airports were built everywhere, and gigantic fortifications were con-

structed along the coastlines of the nation.

Danish vessels at sea took refuge mainly in Allied or U.S. ports. Henrik de Kauffmann, Danish minister in Washington, refused to recognize the German-controlled government but remained at his post as the representative of a free Denmark. The Faeroe Islands were placed under the protection of British troops on April 11.

Political unity was emphasized again on July 8, 1940, by a change in the personnel of the government, in which the four above-mentioned parties became equally responsible. Persons outside the political area also were given seats in the government, e.g., Eric Scavenius, who, as minister of foreign affairs, struck a note of tolerant understanding of the German policies which very soon resulted in a serious difference between him, the political ministers and the majority of the people. But national self-respect grew, and the young people united into a Danish Youth's Working alliance. The occupation forces met coolness and contempt.

The German military occupation soon took on a strongly political character, aiming at the Germanization of the Danish people. But this only strengthened the resistance. Attempts at the establishment of a Danish-German financial and customs union in Aug. 1940, and at obtaining a change of government about the new year, 1941, were defeated by Danish solidarity. But minor demands were met; various political officials withdrew, the penal code was made more rigorous and normal local elections were deferred. In Jan. 1941 the Germans took possession of six Danish torpedo boats.

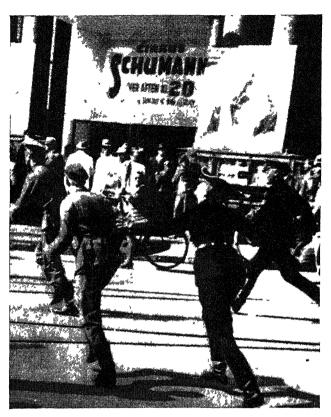
The free Danish diplomats throughout the world found their position difficult. Gradually, as they resisted the political acts of the government, they were dismissed, but almost all continued to function as representatives of a free Denmark. The first dismissal struck Henrik de Kauffmann, the Danish minister at Washington, D.C., but on April 9, 1941, he made an agreement with the U.S.A. whereby the latter assumed protection of Greenland.

When, on June 22, 1941, the Germans attacked Russia, they made fresh demands on the Danish government. The Communist party was proscribed; 300 Communists were interned without legal procedure, and the Danish minister in Moscow was recalled. Permission was given to Danish nazis to recruit volunteers for service with the German army on the Russian front. These violations of the Danish constitution caused great resentment. From this time an illegal, active resistance grew up. Through thousands of secret meetings and in various illegal newspapers, information was passed out among the people explaining the German encroachments.

The first great crisis, in Nov. 1941, was caused by Germany's demand on Denmark to join the Anti-Comintern pact. The government yielded to the German threats, but large demonstrations organized by university students showed the true attitude of the people.

After the death of Prime Minister Stauning on May 3, 1942, Vilhelm Buhl took over his post. A Social Democrat, he displayed great energy in counteracting German influences. Almost simultaneously the minister of commerce, Christmas Möller, escaped to England. His radio addresses there were influential in promoting active resistance in Denmark.

The Germans, searching for some cause for an open break, found what they desired in King Christian's telegraphic reply to Hitler's congratulation on the king's birthday, Sept. 26, 1942. The king merely replied, "My best thanks." This was considered in official German circles as a breach of decorum. After a month of nervous tension,



Danish patriots being routed by nazi soldiers during antifascist uprisings in Aug. 1943

during which a new chief of German forces in Denmark was appointed, Germany demanded a change in the Danish government. The government once more yielded, but without palpable result, and the confidence in a continued peaceful development continued thoroughly shaken. Other German demands referred to the surrender of part of the depots of the Danish army and to the removal of Danish troops from Jutland. These demands were met.

Amid these momentous events, King Christian was seriously injured in a fall from his horse during his daily recreation; he recovered slowly. The new German representative in Denmark, Dr. Werner Best, attempted, meanwhile, to accomplish a satisfactory protectorate, with a view to attracting Danish industrial production toward the German war economy. This gave rise to an even more active resistance than before, and from this time a widespread sabotage spread like wildfire.

Naziism Flouted.—Elections for the folketing (lower house) were held on March 23, 1943. Best gave his permission, probably hoping that this would be considered a gesture of conciliation. All the parties viewed the election as an opportunity to declare themselves in favour of a true democracy. The occasion turned out to be a great national demonstration. Of a total of 2,280,716 voters, 2,040,583—a record 89.5%—cast their votes. The nazi group met a crushing defeat, with the democratic parties collecting 94% of all votes. The following months were full of unrest. German encroachments gave rise to strikes. About the middle of August a general strike extended over 30 towns.

On Aug. 28, 1943, the German government presented an ultimatum demanding the declaration of an emergency, the introduction of the death penalty and the right to arrest Danish hostages. They insisted on a reply by 4 P.M. the same day. The reply was negative. The Germans then

ceased to negotiate and struck hard. On Aug. 29, during the early morning hours, they attacked the small Danish garrisons, forced their surrender and placed the men in internment camps. The navy, however, succeeded in sinking most of the ships before arrival of the Germans. Some smaller craft escaped to Sweden.

An emergency was declared, and German military detachments occupied all Danish towns. The government at once withdrew, but the civil administration, on the recommendation of public officials, was continued.

The Germans attempted to create a new Danish governmental system, but the break was complete. On the night of Oct. 1-2 the gestapo, which by that time had invaded Denmark in large numbers, undertook thorough raids on the Jews; 492 individuals were detained by the Germans, while thousands afterward were illegally transferred to Sweden.

The interned Jews were taken to Theresienstadt in Bohemia, and many succumbed there, the survivors being taken to Sweden in the Spring of 1945.

About the same time a council of liberty, collective organization of all underground movements, was formed. During the remaining period of the occupation, this council became the directing power within the resistance, which grew rapidly from month to month. To this movement the officers of the army and navy attached themselves after their liberation.

Later the police forces joined in, and a strong military organization thus was built up, numbering about 43,000 at the time of liberation.

The most dangerous enemies of the Danish resistance were the so-called *stikkere*, or informers, who reported

Danish workers, massed before government buildings in Copenhagen during July 1945, demanded improved labour legislation



their countrymen to the Germans. By way of self-delense, many of these persons had to be put out of the way. The Germans retaliated by murdering well-known Danes. The first of these slayings was that of the pastor and poet Kaj Munk, who was dragged from his home on Jan. 4, 1944, and murdered by one of the unofficial gangs of the gestapo.

The resistance sabotaged railroads and factories engaged in service for the Germans. In retaliation, German hordes razed entire sections of some cities. One of these German measures of countersabotage, the destruction of the Tivoli in Copenhagen, gave rise to extensive demonstrations in the summer of 1944, the beginning of still larger episodes of similar kind which gradually resulted in a general strike. The Germans tried to counteract this by military force and by shutting off Copenhagen's supply of water, gas, electricity and food; but after some days they were forced to yield to the firm concord of an unarmed metropolis.

In order to deprive the civil population of its last remnant of legal security, the Germans seized and interned the Danish police force on Sept. 19, 1944. Many escaped, but about 2,000 were carried to German concentration camps. Only the guard at the royal castle refused to be disarmed and fought with such skill and zest that the Germans at last gave up the attempt to dislodge them.

The resistance movement received considerable aid from the royal air force. Three attacks, at Aarhus, Odense and Copenhagen, were effective in destroying German head-quarters in these cities. In the last of these attacks, on March 21, 1945, one bomber missed its course and fell on a school, killing about 100 children.

After the general strike in Copenhagen, Danish political leaders and the Council of Liberty conducted negotiations looking toward the establishment of a prospective government, to assume control when Denmark should become free.

Then followed the hectic days of May 1945 and rumours of German capitulation. The battlefront drew closer and closer to the Danish borders, across which a dense stream of Danish and Norwegian prisoners from German concentration camps, released through the negotiations of Count Folke Bernadotte, flowed. These thousands of sufferers carried ample evidence of the collapse and chaos in Germany. But the German forces in Denmark showed fight until the last moment. The commander, Col. Gen. Georg Lindemann, declared in a proclamation dated May 2: "I have undertaken no negotiations, least of all such as involve a capitulation; nor have I made preparations to evacuate. Both I and our troops know our orders but too well. We are ready to fight and to die for them."

On May 4, at 8:34 P.M., however, the long expected message arrived by way of the Danish broadcast from the BBC: "We have just learned that General Montgomery states that the German forces in Holland, Northern Germany and Denmark have surrendered, effective early tomorrow. Denmark is free."

Even before the radio message was finished, the news spread all over Denmark. The joy was indescribable. During the night the resistance took possession of all important centres in order that the capitulation might take place in an orderly and peaceful way. In a few places the nazis showed fight, and minor groups of fanatics held out for some days after. On May 5, at 8 A.M., the capitulation went into effect and was recognized by the ringing of church bells in all churches. The royal banner once more was raised at Amalienborg castle.

Return of the Government.—A unified government assembled under the leadership of Vilhelm Buhl and was joined by Christmas Möller, who returned from England, as minister of foreign affairs. The legislature convened on May 9 amid great solemnity, with King Christian presiding.

About 5,000 Danish fugitives, trained in military life and fully equipped, returned from Sweden to join the 43,000 men identified with the resistance; these forces, to-

Denmark: Statistical Data 1938 1940									
ltem	Value (000's omitted)	Amount or number	Value (000's omitted)	Amount or number					
Exchange rate United States		1 krone =		1 krone =					
Great Britain		21.8 cents 22.4 kroner =£1		19.3 cents 18.1 to 20.6 kroner =£1					
Finance Government reve-	\$123.320	-2,	\$11 <i>7</i> ,198						
nues	(£25,224)		(£30,600)						
Government expenditures	(£24,177)		\$120,151° (£31,371)						
Gold reserves	\$25,668 (£5,250)		•••						
National debt	\$261,354 (£53,458)		•••						
Transportation Railroads		3,050 mi.		2,998 mi.					
Highways Communication		31,873 "		31,744 ,,					
Telephones Radio sets		442,998 668,195							
Crops Root crops (fodder).		26,475,041 tons		23,038,070† to					
Straw		6,304,274 ,,		2,138,462† to					
Sugar beets Barley		1,554,023 ,, 1,525,253 ,,		1,457,113†					
Livestock Cattle		3,238,621		2,988,000†					
Swine		2,842,000 581,490		2,449,000†					
Sea products				•••					
Plaice		95,575 tons 33,343 ,,	•						
Cod		22,950 " 4,018 "							
Herring and mack- erel		22,596 "							
Manufactures Total	\$671,473								
Food	(£137,344) \$189,603								
Chemical and phar-	(£38,782) \$69,110								
maceutical Transportation	(£14,136) \$53,082								
Wood and paper .	(£10,857) \$51,601			•					
Exports—Total	(£10,555) \$334,986	•••							
Butter	(£68,518) \$82,638	174,000 tons							
Bacon	(£16,903) \$79,068	192,000 "							
Eggs	(£16,173) \$30,366	129,881,000 doz							
Ships	(£6,211) \$16,272	129,000 reg-							
Imports—Total	(£3,328) \$354,728	istered tons							
Coal and coke	(£72,556)	5,780,000 tons							
Iron and steel	\$32,830 (£6,715) \$24,748	426,000 "							
Oil cake and meal	(£5,062) \$24,554	845,000 ,,							
(for animals) Oil seeds	(£5,022) \$16,426	403,000 "							
Defense	(£3,360)	450,000 #							
Standing army per- sonnel		11,000		German					
		89,000		occupation German					
Reserves		87,000		occupation					
Standing navy per- sonnel		2,000		German occupation					
Reserves		2,000		German occupation					
Standing air force personnel		975		German occupation					
Military expenditures	\$12,243 (£2,504)		\$14,360 (£3,749)						
Primary schools Students		4,104 407,877		407,355					
Secondary schools . Students		368 72,028		67,064					
Universities Students		•••		6,474					
*Budget estimate.	†1943.			-					

gether with troops of the Allied armies under command of Maj. Gen. Robert H. Dewing, took charge of the enforcement of order.

The German garrison on the island of Bornholm in the Baltic, which lay within the war domain of Russia, refused to surrender but was forced to do so after a bombing attack by the Russian forces. The towns of Rönne and Nexö were reduced to ruins and were occupied by the Russians.

So the tragic years of occupation were ended. Denmark applied for and obtained a place among the Allied nations and began the huge task of reconstruction. World War II had caused comparatively little physical destruction, and the loss of life in Denmark had been small in comparison with that of other countries. The system of production, especially that of agriculture, had remained intact; but the lack of raw materials of all kinds loomed: fuel, raw materials for industry, foodstuffs and fertilizers. The economic dislocations stemmed mainly from the German debt, amounting to 8,000,000,000 kroner, and from a considerable accumulation of money and credit within the country. There also was an almost complete lack of foreign exchange.

The government proceeded to establish a system of taxation aimed at an absorption of profits from World War II. All current money was abrogated as valid means of exchange, and new treasury notes were issued. Simultaneously, for the first time, everybody was ordered to render complete accounts of their holdings. In this way previously hidden fortunes were discovered and confiscated, and the amounts thus collected were used to reduce the public debt.

At the general elections of Oct. 30, 1945, the Liberal party made such great advances that a new cabinet, headed by Knud Kristensen, resulted, a minority government supported by the various non-Marxist parties.

The defeat of Germany gave rise to a renewal of the problem of Denmark's relations to the southern part of Schleswig (Sydslesvig), previously Danish territory. At the outset no desire was expressed on the subject of changing the existing borders but merely on improving the conditions of the Danish minority settled in that province. But the new events caused large circles in Denmark, as well as Premier Knud Kristensen, to enter into a debate with England, Sydslesvig being within the British zone. The debate brought forward the desirability of establishing a mandate claim, the nationality of the province to be decided later by plebiscite. (K. Ged.)

Dental Association, American

See Dentistry; Societies and Associations.

Dentistry

Just as the study of medical education by the Carnegie foundation in 1910 had brought about a new era in medicine, so a similar study of dental education in 1926 had broadened the horizons of dentistry and resulted in increasingly rapid gains toward its goal of becoming a true learned scientific profession. More progress was made in this direction during the decade 1937-46 than was made in all the preceding centuries. These gains were in three major areas: in education, research and clinical practice.

Dental Education.—In 1937, all the dental schools of the United States put in force the requirement of two years of work in an accredited college of arts or science for admission, with physics, biology and chemistry as re-

quired science subjects. This was an important advance; it brought the requirement for admission to the study of dentistry up to the minimum requirement for admission to the study of medicine, and thus helped the dentist meet the physician on an equal footing. Its purpose was to give the prospective dentist a broader educational background on which to build his professional work. No longer could it be said that dentists were uneducated craftsmen.

Also in 1937 the American Dental association, with its 50,000 members, established a standing Committee on Dental Education, its members being chosen from the American Association of Dental Schools, the National Association of Dental Examiners and the American Dental association. In 1940, the council obtained the services of a full-time secretary who had wide experience in the field of education. The council set up certain standards for an acceptable dental school, and in 1944 began the work of accrediting dental schools. Its report in 1945 revealed the fact that while most of the schools of the U.S. could be given approval, several schools were not up to standard and approval was withheld. The fact that the council announced that it was to visit schools for accreditation purposes resulted in all schools "cleaning house" and eliminating, so far as possible, the weak spots. This work resulted in a marked improvement in the quality of teaching. The dental schools, however, were under a severe handicap-lack of adequate endowment. Income from tuition and from clinics conducted by the schools was not sufficient to develop a teaching and research program that could serve its greatest usefulness to students and the public. Until a school had a liberal endowment it could not develop as it should.

In 1945, the Curriculum Survey committee of the American Association of Dental Schools published a report, Teaching in Colleges and Universities (with Special Emphasis on Dentistry), which was a scholarly contribution to the literature of teaching and clearly indicated how far dentistry had gone along the path of progress.

The literature of a profession reveals its strength and its weakness as well. Dentistry had striven for several years to improve its publications. A Commission on Journalism of the American College of Dentists and the American Association of Dental Editors worked diligently during the decade 1937–46 toward this goal. In 1937, the Journal of Dental Education was started by the American Association of Dental Schools. It was concerned primarily with the problems of dental teaching and proved to be of distinct value to teachers in all the dental schools.

For a long time the subject of dentistry as a specialty of medicine had been discussed. The new knowledge of the relation of diseases of the mouth to diseases in other parts of the body all pointed to the necessity of a closer integration of medicine and dentistry and their respective educational institutions. In 1941, a book of considerable significance to dental education was published: Dental Education in the United States. The authors were the deans of two university dental schools. The book called attention to the pressure of new knowledge in all the sciences that was being brought to bear on dental education and dental practice and pointed out that this accumulated knowledge brought into existence at many points the need for further modification of the program of dental education.

In 1940, one large university decided to experiment with a new plan of dental education. A combined course of five years was offered under the jurisdiction of the faculty of medicine, the successful completion of which would bring an award of both the degree of Doctor of Medicine and the degree of Doctor of Dental Medicine. The experiment was not successful, partly because of war conditions, so a new program was developed in which a young man seeking a dental training would be admitted to the school of dental medicine on the same requirements as admission to the medical school. The first two years of the course were the same as for medicine and carried two years of credit in medicine. The last two years, as formerly, were given over to clinical dentistry. In 1946, the dental school of another university was taken over by the faculty of medicine, and the course was developed along lines similar to the one just described. These experiments were severely criticized, especially by those who believed strongly that dentistry should be an autonomous profession. Whether the experiments of these two universities would eventually set a pattern could not be fore-

During the decade, the importance of dental public health and the need of strong dental divisions in state and city departments of health were widely recognized. Such divisions were organized in some states, but when men competently trained to administer the work were sought it was found that they were almost entirely lacking. The establishment of courses in training for dental public health service by two leading universities came in response to a large demand. In one of these universities the course was offered under the joint auspices of the school of public health and the dental school, a collaboration which signified the progress made by dentistry.

In 1942, the American Dental association, in recognition of the importance of public health dentistry as a means of better serving the people, established a Council on Dental Health. Through the efforts of this national council, state councils on dental health were organized in most of the states. Dental health programs for children and adults were developed, and much dental health educational material was prepared.

Research.—During the early years of the decade 1937-46, the research attack on dental diseases was largely concentrated on nutritional factors. The vitamins and calciumphosphorous metabolism were studied by many investigators. May Mellanby of England concluded that the quality of tooth structure is of the greatest importance, being dependent upon nutritional factors during the formation of the teeth; with advancing knowledge of nutrition, it should be possible to reduce tooth decay. T. Streter von Krudenstein of Germany found in parathyroidectomized rats that calcification was largely a matter of raising the calcium content of the blood. Otto Bessey and S. Burt Wolbach at Harvard produced diffuse alveolar atrophy in animals fed diets deficient in vitamin C (ascorbic acid), and these findings corresponded in essential characteristics with type two pyorrhoea found in human beings. D. Perla and M. Sandberg of New York city concluded that the adrenalin gland is not essential in the production or utilization of vitamin C but described interesting changes in the incisor teeth of adrenalectomized rats. Nor were the hormones overlooked. Ira T. Nathanson and David B. Weisberger reported in 1939 on "The Treatment of Leukoplakia Buccalis and Related Lesions with Oestrogenic Hormones." The oestrogens were administered to patients in two forms-oestrodiol benzoate which was used parenterally and alph-oestrodiol which was given by mouth. Their conclusions were of interest:

Evidence was presented which suggested that leukoplakia buccalis and similar lesions are associated with alterations in the menstrual cycle in women and with a deficient or disturbed metabolism of the sex hormones in both sexes. Treatment with oestrogen based on this evidence resulted in the complete disappearance of the lesions in 42%, marked improvements in 39%, and no improvement in the remaining 19% or 38 patients. In general the women responded more satisfactorily to the treatment than did the men. Although further observation was needed it was suggested that this type of therapy in combination with other well-recognized procedures might prove of value in the treatment of leukoplakia buccalis. (New England Journal of Medicine, Oct. 12, 1939.)

Clinical experience following this report indicated the soundness of this procedure. In view of the fact that leukoplakia buccalis was regarded as a precancerous condition, the implications of the report were far reaching.

Dental caries had long been a hardy perennial among the various dental diseases. During the latter part of the decade 1937-46, research in this field increased in many areas. Research was largely concentrated on the effects of fluorine for the control and suppression of dental caries, and interest spread through the country at a rapid rate. Many reports of research appeared on the use of fluorine for the control of dental caries. The low incidence of dental caries among persons living in areas supplied by waters containing the fluorides was reported from many sections of the world. H. Trendley, dean of the U.S. public health service, reported that in areas where there is 0.5 parts per 1,000,000 of fluorine in the drinking water, there is a low incidence of caries. In areas where the fluorine is present above 2 or 2.5 parts per 1,000,000, changes in the tooth structure known as mottled enamel and hypoplasia of the tooth structure appear. This mottling and hypoplasia were produced experimentally in the teeth of rats by feeding potassium fluoride. This led to the idea that if approximately one part per 1,000,000 of fluorine was added to a community's public water supply there was excellent probability that dental caries might be controlled on a mass basis. So strong was the evidence that two experimental programs were set up. In New York state, the city of Newburgh authorized the placing of one part of fluorine per 1,000,000 to the domestic water supply. Provision was made to have the results carefully checked. Kingston, N.Y., close by, was selected as a control city for the Newburgh experiments. In Michigan, Grand Rapids authorized a similar experiment, and Muskegon was selected as the control city. The results of this experiment in Michigan were carefully checked by scientists from the University of Michigan. A second method of utilizing fluorine was studied. This method consisted of topical application of a 1% sodium fluoride directly to the teeth. One investigator reported that in experiments in 80 children over a period of two years, this topical application of 1 to 1,000 solution of sodium fluoride reduced dental caries by somewhat more than one-third as compared with results in the corresponding untreated quadrants in the same mouth. Nothing previously studied had offered such important possibilities for the control of one of the most prevalent diseases in man.

During the decade there was also an increased interest in what became known as industrial dentistry. Certain occupations seem to predispose those engaged in them to certain dental difficulties. The loss of time of the worker from ordinary dental disease also became an important economic factor in industry. Isaac Schour and B. G. Sarnat described some of the early manifestations of occupational origin. These manifestations—reactions to noxious agents, chemical, physical or bacterial—were observed to take one or more of the following forms, abrasion, the decalcification of the teeth, inflammation and circulatory disturbances of the mucous membranes. Of particular interest during

the period of World War II was the observation that munition workers exposed to acids often showed decalcification of the teeth. Metal workers, on the other hand, developed enamel pigmentation. Gingival haemorrhage and ulceration and necrosis of the mandible were reported among those exposed to benzine such as coke-oven and smokeless-powder workers. This naturally stimulated employers of labour to develop dental programs and dental care in their plants. Earle H. Thomas, in a paper on "Mouth Infection in Industrial Workers," pointed out the importance of maintaining oral health as a means of preventing loss of numerous man-hours, and of increasing production. Harold A. Hooper, dental consultant for the Chicago, Milwaukee, St. Paul and Pacific railroad, stated in a paper on "Dental Services in Industry" published in Clinics, vol. 2, p. 703-718 (1943), that "No student of the problem of employee absenteeism resulting from nonoccupational illnesses can come to any other conclusion than that oral sepsis is a major, if not the major, underlying 'root' cause of an astonishing proportion of it."

A recognition of the importance of these conditions resulted in a study by the Council on Dental Health of the American Dental association on the problems of industrial dentistry. A sufficiently large number of industries developed dental services with the employment of dentists in their plants, so that an organization of industrial dentists was formed in 1943.

Vitamins.—The effect of various vitamins on normal and diseased tissues of the mouth was studied. It had long been known that vitamin C has an important role in the maintenance of healthy gums; in fact, vitamin C had been called the gum vitamin. One study showed that of a group of people with disease of the gums 94% had a low vitamin C blood level, and that the administration of synthetic vitamin C, with no other treatment, improved materially the health of the gums. But it was also shown that vitamin A, various fractions of vitamin B and vitamin D also played their part in the maintenance of a healthy mouth.

Clinical Practice.—One of the outstanding developments in industry generally in 1940 was the rapid development of plastics for various uses. Dentistry soon found that the plastics offered a very important advance in the restorative procedures. For many years vulcanized rubber had been used as the best material for dentures; this material, however, had some serious disadvantages. Plastics seemed to fulfil all the requirements that vulcanite had offered, with an elimination of most of the disadvantages of the latter. As a result plastics began to be used very widely, and it proved to be so satisfactory that teaching of the construction of dentures with vulcanite rubber was given up in some of the dental schools. The modern plastic had completely replaced an old favourite. Two papers in 1940, "A Century of Progress in Dental Base Materials" and "Non-metallic Denture Materials-their Development and Relative Merits," dealt intensively with this subject. In the last five years of the decade, acrylic resins were used in constantly increasing quantities.

Dental infections, both acute and chronic, had long been a serious problem in the practice of dentistry. For the most part they were treated surgically, frequently with the loss of teeth and other tissues. Fortunately the organisms ordinarily found in the infections of the mouth are susceptible to the new wonder remedy—penicillin. Vincent's infection, or trench mouth, was extremely prevalent both in military and civilian life. In an evaluation of penicillin therapy at the National Naval Medical Center,

Bethesda, Md., based on 1,455 cases, it was found that in stomatitis and Vincent's infection treated with 20,000 units of penicillin intramuscularly every two hours for two or three days, good results were obtained. Many other reports from various other centres gave similar encouraging results. Later, development of penicillin therapy resulted in the use of agar pastilles of penicillin dissolved in the mouth. The opinion of one group was that these pastilles provided the best-known type of therapy for Vincent's infection.

No account of dental activities during the years 1937-46 would be complete without mention of the 100th anniversary of the founding of the first dental school in the world. This centenary was observed in Baltimore in 1940. Delegates from various dental organizations in the United States and in many other countries of the world attended this significant celebration. Scientific sessions were held over a period of three days. Papers and reports presented at these meetings, in published form, resulted in a book of somewhat more than 1,000 pages. The meeting outlined the efforts dentistry had made to improve itself and obtain an honoured place in the role of the great professions such as law, medicine and the ministry; it gave a great impetus to dental educators and dental practitioners and undoubtedly marked a new era for the profession of dentistry and for the public.

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Dentz, Henri Fernand

Dentz (1881-1945), French army officer, was born Dec. 12, 1881, in Roanne, France. He entered St. Cyr military academy at the age of 19, and later joined a zouave regiment as lieutenant. Graduated from the École de Guerre in 1910, he served in World War I and was cited three times, being promoted to rank of major. After the war he served in occupation posts in Mainz, Germany, and at Constantinople (Istanbul). Sent to Syria, he headed the French military intelligence. Promoted to brigadier general in 1934, he was made commander of an army corps in 1939.

Dentz joined Vichy after the collapse of France in June 1940. In Dec. 1940 he was appointed high commissioner of Syria and Lebanon and was put under direct orders of Gen. Maxime Weygand. On June 8, 1941, British and Free French armies invaded Syria after Vichy rejected

Allied demands to oust axis agents there. The Vichy forces resisted the British drive, but Dentz's position was hopeless and he concluded an armistice on July 12, 1941. Interned Aug. 8, 1941, by the British on a charge of violating the armistice agreement, he was subsequently released in Sept. 1941 in an exchange of prisoners.

In 1945 Dentz was tried before the high court of justice in France on charges of treason. Found guilty, he was sentenced to death (April 20), but the sentence was commuted in October to life imprisonment by Gen. Charles de Gaulle. Dentz died Dec. 13, 1945, in Paris.

Deportation

See ALIENS; IMMIGRATION AND EMIGRATION, U.S.

Deposit Insurance Corporation, Federal

See FEDERAL DEPOSIT INSURANCE CORPORATION.

Dermatology

The decade 1937–46 registered great advances in dermatology as in many other branches of medicine. The introduction of numerous new drugs probably accounted for the most striking and at times dramatic advances which were stimulated by World War II. The war was also responsible for the new interest shown in tropical diseases of the skin and in industrial dermatoses.

Tropical Diseases of the Skin.—Pinta.—Of all the tropical skin diseases, pinta yielded most to advances in medical knowledge during the decade. Confined almost entirely to the American tropics, pinta had become especially widespread in Mexico and Colombia.

The cause of pinta was discovered on Aug. 3, 1938, by J. Grau Triana and J. Armentéros in Havana, Cuba, the causative organism being a spirochete, morphologically identical with those causing syphilis and yaws. This discovery upset the erroneous views held by the majority of physicians for 40 years and proved that the disease was not caused by fungi.

Soon after the discovery of the Treponema herrejoni (the name used in Mexico), F. León y Blanco, a Cuban, went to Mexico, where he made some striking discoveries. He proved by inoculating numerous volunteers, including himself, that an initial lesion would appear at the end of a week and that within three to nine months secondary manifestations, so-called pintides, would often appear. These lesions were nonspecific in appearance, often resembling psoriasis, syphilis, ringworm and even leprosy. However, until the treponema was discovered, their relation to the disease was incapable of proof.

The serologic reactions with complement fixation or flocculation tests were negative during the primary stage and positive in the majority of cases in the secondary stage. It may be said that the late dyschromic stage constituted all that was known of pinta prior to the discovery of the causative organism.

León y Blanco not only proved that the disease was inoculable in man but that immunity was not conferred by a previous infection with syphilis.

Leprosy.—Leprosy was of increased interest because a large number of men in the armed forces spent months or years in countries where the disease was endemic. That there would be new cases of leprosy in temperate climates among returning veterans of World War II was unquestionable, although the actual number could not be told for 10 or 15 years, owing to the variable period of incubation.

At the International congress in Cairo in 1938, the term "neural leprosy" was redefined. This includes all cases of "benign" type with polyneuritic disturbances or macules of nonlepromatous nature. Many lesions are histologically of tuberculoid nature, including changes in nerves, as shown by V. Pardo-Castello. Harry L. Arnold stressed the importance of differentiating lepromatous from neural leprosy. This enabled the physician to decide on the disposition of the case, to evaluate the effect, if any, of treatment and to soften the blow when informing the patient of his disease. Arnold believed the term "mixed leprosy" should be abandoned as it was never intended to mean mixed types of the disease but mixed sites of involvement, both skin and nerves.

These authors agreed with South American dermatologists that the term "tuberculoid" should be substituted for neural leprosy.

Almost every conceivable form of treatment had been used in leprosy with poor results in general. Even chaulmoogra oil and its derivatives were thought by some experienced leprologists in 1946 to be without value, according to George W. McCoy. Experimental work at Carville, La., with three synthetic sulfonamide drugs, including promin, promizole and diasone, gave more hopeful prospects.

Oriental Sore.—Oriental sore (cutaneous leishmaniasis) was intensively studied by D. A. Berberian. He found that immunity was not complete until the sore had healed. He stated that the disease may also appear at times after exceptionally long periods of incubation. In three artificially induced lesions, the time was 18, 30 and 56 months respectively. Immunity was achieved only by natural infection or by an artificially induced sore, but not by vaccines alone.

I. Katzenellenbogen reported on 416 persons whom he vaccinated against oriental sore. In 237 cases a sore developed after an incubation period varying from less than two weeks to 18 months. This reduced the incidence of the disease in an endemic area. He advised that vaccination should be made four to five months after the beginning of the sand fly season.

A. Dostrovsky and Felix Sagher obtained excellent results in Palestine in treating 72 cases by grenz rays. Twelve of these were cases of the unusual recurrent types which had previously been entirely rebellious to treatment.

The occurrence of oriental sore in the western hemisphere continued only by importation. Kermit G. Dwork collected, from the literature, reports of 28 cases observed in the United States and Canada and added 4 others.

Cutaneous Diphtheria.—According to Morris H. Saffron, cutaneous diphtheria is a common disease in certain areas where diphtheria is more or less endemic and climatic conditions are favourable. During World War II it was a military problem, especially in the near and middle east, southern Europe, India and the African coast. Two forms of the disease occur, the acute variety, which is rare and is associated with nasal or faucial diphtheria, consisting of a solitary lesion, and the chronic variety characterized by multiple indolent lesions resulting from superinfection of a pre-existing dermatosis by Corynebacterium diphtheriae. Both types may result in characteristic post-diphtheritic complications such as paralysis and myocarditis. The treatment recommended was diphtheria antitoxin administered parenterally in fairly large doses.

Parasitic Diseases.—A real triumph was scored in the control of pediculosis during World War II, to the extent that the U.S. soldier rarely became personally acquainted with the body louse. However, masses of the civilian population in liberated and occupied countries did not escape

louse infestation. It was especially severe in Naples, Italy, in the winter of 1943. One thing alone obliterated this menace and that of typhus fever, namely, the use of the new insecticide commonly called DDT. Delousing was accomplished principally by using the drug as a powder of 10% in talc, dusted by blowers onto the body and through the clothes.

Scabies was not eliminated during World War II, and it reached epidemic proportions in the European civilian population. It was the most common skin disease seen in the army, at least in the European theatre. Treatment of scabies by sulphur ointment had always been the standard procedure until 1937. Benzyl benzoate was used in the British and U.S. armies because it was felt that considerable loss of manpower was saved by the one day ambulatory treatment as opposed to the three or four day sulphur ointment treatment, which often required hospitalization.

Fungus Diseases.—Dermatophytosis.—World War II added fresh importance to dermatophytosis and stimulated many investigations of this disease. Those of Fred D. Weidman, Joseph G. Hopkins, Chester W. Emmons and George M. Lewis indicated certain changing concepts. Bacteria were gaining prominence as a cause of many cases of infectious intertrigo that had previously been considered mycotic in origin. They emphasized sensitization to local applications, trauma and long-standing hypostasis as a cause of dermatitis. The use of foot baths containing chlorine compounds was becoming discredited. More emphasis was laid on careful hygiene of the feet in prophylactic treatment. Evidence was submitted in the controversy whether dermatophytosis predisposes to contact dermatitis. The evidence indicated that it does not. This was of importance in adjudging disability claims, both civil and military. They proposed methods of standardizing fungicides and the clinical evaluation of them. For therapy, some of the older remedies, like Whitfield's ointment and boric acid, were found to be of value, as were some of the newer fungicides, such as the fatty acids and their salts.

While in the navy, Marion B. Sulzberger and A. Kanoff experimented with various remedies for fungous infections of the feet. Previous findings were confirmed that undecylenic powder was the most practical and effective remedy as prophylaxis. It showed its superiority in maintaining freedom from even minimal or "subclinical" signs of infection. No essential difference in the value of undecylenic powder or ointment was observed.

Wood Filter.-Although the Wood filter had been invented in 1903 by the physicist Robert W. Wood, it became an extensively used dermatologic practice only during the decade 1937-46. As stated by Maurice J. Costello, fluorescence with the Wood filter is an important aid in the diagnosis of ringworm of the scalp, beard and body. Hairs of the scalp infected by Microsporon audouini fluoresce with bright luminous pale green colour. The Wood filter also checks the progress of the disease or treatment and is one of the most practical means of determining a cure. It is of great value in detecting cases of tinea capitis, which show little clinical evidence in spite of wide extent of infection. It is especially valuable as a quick method of examining large numbers of school children during an epidemic. It can also be used to detect the presence of fungus on pet animals, infected headwear, clothing, etc.

Occupational Dermatoses.—With the enormous increase

of industrial activities during the war years, the importance of the industrial dermatoses as a factor in the efficiency of war production focused the attention of many dermatologists on this problem. Their work greatly increased knowledge of the methods of causation and prevention as well as the mechanisms involved in the production of dermatoses.

The most important work in the field could be divided into three main headings: (1) causes; (2) diagnosis; and (3) prevention of industrial dermatoses.

An important advance in causation was the realization that most of the industrial irritants could be divided into two main groups-primary irritants and sensitizers. It was quickly realized by actual field work that primary irritants were responsible for more than 80% of the dermatoses. Many authors, especially Louis Schwartz, wrote extensively on the main primary irritants in industry, the most important of which were the cutting oils and the solvents. Outstanding was the study of the mechanism of causation of occupational acne by Schwartz and Samuel M. Peck. Another conception which applied as well to the broad field of allergic dermatoses in general was the observation that "hardening" occurs in industrial allergic dermatoses. This mechanism or the development of a hypo-allergic state from continuous contact with a sensitizer could be applied to all allergic contact dermatoses. The epidemiology of dermatophytosis and its method of spreading were also well studied among the industrial population by Peck and his co-workers.

Improvement in diagnosis of industrial dermatoses was acquired by recognizing well known entities usually caused by primary irritants which give more or less specific syndromes and by the use of the patch test. Lists of concentrations of patch test substances were constantly being added to, so that the practising physician could carry out such tests properly.

The necessity, because of war conditions, of keeping the worker at his job was a tremendous spur to the development of preventive measures when contact with industrial irritants could not be avoided by a totally enclosed process. These included protective ointments, protective clothing of various types and industrial skin cleansers.

Vitamins.—One of the fields of medicine attracting a stupendous amount of research during the decade was the vitamin deficiencies. Specifically, as far as skin diseases were concerned, only a few dermatoses were found to be definitely related to avitaminosis. Paul A. O'Leary divided dermatoses in which vitamin therapy had been investigated into three groups: (1) those in which vitamin therapy had produced rapid and clear-cut response; (2) those diseases in which the results were less conclusive and not seen in every case; and (3) the group in which vitamin therapy reportedly caused improvement but on later investigation showed insignificant change.

Those diseases responding to vitamin therapy included pellagra, cheilosis, phrynoderma, pityriasis rubra pilaris, keratosis follicularis and the seborrheids described by Paul Gross.

A small group of skin diseases showed partial response or inconsistent response to vitamins; these were lichen spinulosus, Keratosis pilaris, senile vaginitis, Monilia infections, rosacea, keratotic psoriasis, acne cachecticorum and "dry skin." Dermatoses showing insignificant response to vitamin therapy were dermatomyositis, scleroderma, epidermolysis bullosa, lichen planus, acrodynia, herpes zoster and the prevention of arsphenamine dermatitis.

Therapy.—Sulfonamides.—Sulfonamide and its derivatives were proclaimed by some observers "the greatest therapeutic achievement of modern medicine." Besides the original sulfanilamide, numerous other compounds were developed during the decade 1937–46 and were used internally and externally in many dermatoses of various and often unknown causation. An enormous amount of clinical and experimental material was accumulated, and the therapeutic results reported by various authors in the same disease were often contradictory, ranging from brilliant success to failure.

Maurice J. Costello and co-workers obtained good results in chancroid, *inguinal adenitis*, nonspecific ulcers, lymphangitis associated with dermatophytosis, *dermatitis herpetiformis*, ecthyma, impetigo, furuncles and carbuncles.

According to Frank C. Combes and Orlando Canizares, sulfonamides deserved a trial in many dermatoses, especially if other methods of treatment had failed, such as erythema multiforme, erythema nodosum, postular bacterids, pyoderma gangraenosum and hydradenitis suppurativa.

Observations by H. W. Barber and others showed that different sulfonamides differ in their therapeutic effect. Some diseases which do not respond to one compound of this group respond well to another. Sulfapyridine, e.g., proved most effective of the entire group in dermatitis herpetiformis, acrodermatitis continua and actinomycosis. In cases of chronic and resistant diseases, sulfonamides were given in some cases for a long period of time, for months and even for several years before a decided improvement or clinical cure was obtained. Donald M. Pillsbury and other authors advised not applying the drug locally for more than five days in succession to avoid sensitization, especially by sulfathiazole. Local applications were found almost as dangerous as internal use due to absorption of the drug, especially if it was used on large denuded or eczematoid areas. Observations indicated that a sensitization might develop without any visible signs and might persist for many years after the drug had been discontinued.

Numerous observations were published on eruptions in patients receiving sulfonamide compounds. These eruptions presented various clinical types, including macular, papular, vesicular, bullous, urticarial and purpuric, and were often accompanied by chills, fever and changes in the blood. A few fatal cases were reported. These eruptions were considered to be due to sensitization, the toxic action of the drug itself and sensitization to light.

Penicillin.—The furor created by the introduction of penicillin was followed by a thorough trial in dermatology, as in all other branches of medicine. Theodore M. Cohen and R. O. Pfaff considered that the pyodermas as a group presented the most promising field for this drug. They found it of special value in impetigo contagiosa, furunculosis, so-called tropical ulcer and dermatophytosis secondarily infected with haemolytic streptococci and secondarily infected eczema. So-called tropical ulcers constituted 24% of patients in the South Pacific with pyodermas. When penicillin in ointment form was used to replace sulfathiazole ointment, healing time was cut to 30% with no evidence of irritation.

An important feature of penicillin is that it is an essentially harmless drug, causing at times only mild reactions. Unfortunately, it did not prove of value in any serious disease of the skin comparable with the astonishing results in syphilis. Its value was proved in Vincent's angina and actinomycosis.

Harry J. Templeton and his associates had excellent

results using gauze impregnated with penicillin liquid in superficial infections of the skin. In deeper infections like sycosis vulgaris, their results were of questionable value. It was unfortunate that all cases of such an almost incurable and deforming disease as sycosis vulgaris did not always respond to penicillin. A. Burrows and others who treated this disease with penicillin cream stated that it was an absolute requirement, before beginning treatment, to test the sensitization of the causal organism to penicillin.

Reactions from penicillin were of urticarial type after injections and of eczematous type after application of an ointment. Leon Goldman noted 16 cases of contact dermatitis out of 350 cases in which penicillin ointment was used.

Tyrothricin.—Tyrothricin was first reported as a germicidal agent by R. J. Dubos in 1939. It was extracted from cultures of a soil bacillus and contains two antibiotic substances. Tyrothricin as a whole is effective primarily against gram positive bacteria and must come in direct contact with the microorganisms. The presence of pus or serum inhibits its activity. Tyrothricin has been used in the form of a solution and an ointment. The solution has been used as wet dressings or as an irrigation. Both the solution and ointment are stable and do not require refrigeration. Tyrothricin can be used only for local applications. It is ineffective when taken orally and is both ineffective and dangerous if used intravenously.

Local applications of tyrothricin did not produce toxic manifestations, pain or discomfort according to M. L. Rankin, who obtained excellent results in chronic ulcers of the leg. Harold E. Anderson noted good results in pyoderma, traumatic ulcer and decubitus ulcer. A. G. Franks and others found tyrothricin effective in *impetigo contagiosa*, pyoderma and *dermatitis repens*, but of limited value in *sycosis vulgaris* and nummular eczema. According to the best observers, tyrothricin is effective only against superficial inflammatory eruptions and secondarily invaded eruptions, especially if caused by the Staphylococcus or Streptococcus.

Antihistamine Drugs.-Great progress was made in the synthesis of substances with an antihistamine effect. The three most effective drugs of this type were antergen, benadryl and pyribenzamine. The most striking results were obtained in both acute and chronic urticaria. The disadvantages were that in some cases the effect continued only as long as the administration of the drug continued, and numerous disagreeable reactions were encountered at times. According to Earl D. Osborne and others, from an experimental and laboratory standpoint and their own experience, pyribenzamine was the drug of choice. Reactions were minimal and seldom necessitated stoppage of the drug. All cases of acute urticaria were relieved, and about two-thirds of the cases of chronic urticaria were benefited. The drug was also helpful, but to a much smaller degree, in atopic eczema.

Of 18 cases of urticaria treated by Arthur C. Curtis and B. B. Owens with benadryl, 14 showed decided improvement. Of eight cases treated by Loren W. Shaffer and associates, all except one showed favourable results. Of 20 cases of urticaria treated by G. Waldbott, complete symptomatic relief was obtained in 16 cases. However, the use of benadryl by S. J. Levin showed that, in 63% of the cases, there were reactions of some type, in half of which the drug had to be discontinued.

Podophyllin in Verruca Acuminata.—The successful use of podophyllin in the treatment of acuminate warts was not generally known until the reports of Isaac W. Kaplan and his co-workers were published in 1942. They found that the lesions disappeared rapidly and permanently after

one or two applications of a 25% suspension of podophyllin in mineral oil. No satisfactory reason for its curative action had been discovered at the end of the decade. Maurice Sullivan and L. S. King treated 50 cases according to the technique of Kaplan and obtained complete cures in 48 cases of the moist type. The two failures were of the dry type, which approximated Verruca vulgaris. In treating 100 cases of common warts by the same method, only 15% of cures were obtained. As these authors considered a disadvantage of Kaplan's technique to be a tendency to spreading of the remedy to the normal mucosa, they treated another series of 30 cases with 20% podophyllin in alcohol. This resulted in a complete cure of all of their cases with much less irritation to the normal mucosa.

Calciferol in Lupus Vulgaris.-Remarkable results in the treatment of Lupus vulgaris with large doses of calciferol were reported by G. B. Dowling and W. P. Thomas. They treated 38 cases, of which 16 were followed for more than a year. In all of them improvement was observed and in 12 cases the lesions seemed to have disappeared entirely. In one case, there was a return of the disease in the 18 months after the treatment was stopped. The treatment had the disadvantage of doses which border on the toxic. At least eight patients showed signs of intolerance such as nausea, loss of appetite and depression. Most of these received 150,000 units of calciferol daily. All of these toxic symptoms disappeared when the dosage was reduced to 100,000 units. Calciferol is prepared artificially by irradiation of ergosterol. Large doses are known to cause deposition of calcium in soft tissues, notably the renal tubules and arterioles and the media of large blood

Treatment of Lupus Erythematosus.—The disseminated type of Lupus erythematosus is such a serious disease that any new remedy recommended by an experienced dermatologist was worthy of trial. A. Benson Cannon reported successful results in five cases of this disease following oral administration of iodine. All five patients had previously received various methods of treatment without success. Cannon administered iodine in doses of three drops, three times a day, increased at times to 20 drops. The patients were also given vitamins and a high caloric diet, 3,000–5,000 calories a day. All gained weight, and all of the cutaneous lesions disappeared completely.

Mapharsen was tried experimentally by Lawrence C. Goldberg in 21 cases of the chronic discoid type of Lupus erythematosus. An average of ten injections was given in doses of 0.02 gm. in 4 cc. of distilled water. Improvement occurred almost immediately. The redness disappeared first, and later the scaling. Pigmentation never entirely disappeared, especially in Negro patients.

BAL (Anti-lewisite).—The search for a drug to combat arsenical poisoning was stimulated by World War II, when it was realized that arsenical war gases might be used. A neutralizing agent against the arsenical war gas lewisite was developed by R. A. Peters and his associates, which the British named BAL for British anti-lewisite. Applying this compound as an ointment prior to exposure to the arsenical vesicant agents, no cutaneous damage resulted. Also, even if the vesicant was applied first, BAL stopped further damage if applied within two hours.

The most promising use for BAL was found when it was determined that intramuscular injections of a 5% to 10% solution in oil gave excellent results in treating systemic arsenical poisoning caused by syphilitic therapy. Harry Eagle reported the largest series of cases of arsenical poison-

ing treated by BAL and found that most cases of arsenical dermatitis, toxic encephalitis, agranulocytosis and arsenical fever responded well to intramuscular injections of BAL. Other heavy metal poisonings, especially mercury, also responded to treatment with this remedy.

Surface-Active Agents.—With the development of synthetics, chemists produced substances of great interest to dermatologists—surface-active agents. Some of the earliest of these were the "sulfonated" oils used in the textile-dyeing and leather industries. They were produced by treating various vegetable and animal fats with sulphuric acid. The sodium salts which are reasonably stable were the progenitors of hundreds of synthetic surface-active agents. These substances were utilized in dermatology as soapless detergents and as emulsifiers of hydrophilic ointment bases and creams. The use of these agents as a substitute for soap in the cleansing of the acutely inflamed or chronically irritated skin became widespread both in the management of various eczematous eruptions of the hands and as a prophylaxis.

Many of these synthetics were tried in the development of the hydrophilic water-soluble ointments, in which any kind of water-soluble, oil-soluble or insoluble drugs could be incorporated. In ointments these emulsifiers permit the vehicle to absorb water, a valuable feature, since petrolatum, which does not absorb water, had largely replaced the animal and vegetable fats.

Another property of these surface-active agents is their ability to lower the surface tension of bacteria and, as a result, greatly increase the efficiency of bactericidal solutions. Also, some of the surface-active agents are potent germicides in their own right.

Electrocoagulation in Hypertrichiasis.—The removal of superfluous hairs by electrocoagulation has the advantage of rapidity over electrolysis. About 200 hairs can be removed in an hour by a skilled operator. Pain is slight and is well tolerated when 60–70 milliamperes are used intermittently for three or four seconds. The current employed is a highly damped oscillatory discharge with a frequency of 1,000,000 cycles per second. It is obtained from a small spark gap type of high frequency apparatus. In some cases, there is an erythematous reaction about the hair follicles, always disappearing in two or three weeks. In 103 cases treated by Charles Lerner, no scarring occurred and no recurrence at the end of six months.

Rhus Extracts.—F. A. Stevens summarized the knowledge of the status of poison ivy extracts in 1945, and stated that treatment of acute poison ivy dermatitis by extracts had been favourably reported by several dermatologists more than 20 years previously. However, Stevens concluded that because of reactions reported in the treatment, because the practice was not in conformity with theory, and because poison ivy dermatitis is a self-limited disease, the use of the extracts in treatment was to be condemned.

As to prophylactic use of the extract, most of the earlier work was done without controls, and later work showed that some degree of protection was really obtained by using extracts as a prophylaxis. Stevens said that desensitization can be accomplished prophylactically by the use of extracts, especially by potent oral preparations. However, no such potent oral preparations had been submitted to the Council on Pharmacy and Chemistry by 1946.

Dermatitis Caused by Nail Lacquer.—During the first half of the decade 1937-46, there were many reports of dermatitis in women from nail lacquer. Cases were constantly seen by dermatologists, and the eruption became

known to the general profession and some of the laity. Earl D. Osborne and associates reported a series of 100 cases in 1941. Nail lacquer by 1946 was the most common cause of dermatitis of the eyelids in women. The eyelids were affected in every case, though in addition, the eruption might occur on other parts of the face, neck, chest, etc. Fred Wise and Marion B. Sulzberger stated that they had even seen several cases of *Pruritus vulvae* due to nail lacquer. Patients, they said, seemed to be hypersensitive only to one or more dyes, or to perfumes, fixatives or plasticizers used in the lacquer. The patches are erythemato-squamous and disappear soon after the removal of the lacquer. For some unknown reason, patch tests are not of much value as they may be negative in undoubted cases.

Familial Benign Pemphigus.—In 1939, Howard Hailey and Hugh Hailey described a clinical syndrome called by them familial benign chronic pemphigus. This eruption is characterized as a chronic disease with distinctly familial tendencies. The primary lesion is a vesicle or bulla arising on normal skin, which ruptures, producing erosion. The erosion becomes crusted and resembles impetigo. The process is superficial and leaves no scars, and it recurs in the site of the original lesions. The areas of predilection are the sides of the neck, the axillary folds and other flexor surfaces.

The histologic structure is suggestive of both pemphigus and Darier's disease, showing intraepidermal vesicles, bullae and dyskeratosis. The basal cell layer remains attached to the cutis and there is oedema of the prickle cells. There is hyperkeratosis over the vesicles and bullae, with separation of the outer layer of the epidermis from the stratum granulosum.

Atabrine Dermatitis.—A new and unusual eruption appeared immediately after the Buna campaign in New Guinea in 1943, among U.S. and Australian soldiers who were hospitalized in Australia. The disease became fairly common, was often generalized and occasionally fatal. In some respects it simulated lichen planus but was not typical of this disease and at the outset caused differing opinions as to its nature. It was spoken of as "atypical lichen planus," "lichenoid dermatitis," etc., and by the soldiers as "New Guinea rot."

As the disease was invariably associated with ingestion of atabrine for the suppression of malaria, it was eventually agreed by the majority of medical officers that the essential cause of the eruption was this drug (quinine hydrochloride). Other factors, as suggested by Herbert S. Alden and Louis J. Frank, may have acted as a trigger mechanism, such as contact dermatitis, fungous infections, emotional fatigue, etc. While often spoken of as the New Guinea disease, the eruption was also eventually observed in the Mediterranean theatre of operations.

Publications by medical officers of the armed forces were not allowed until the end of hostilities with Japan. While reports were submitted to the medical department of the U.S. army in June 1944 by Charles L. Schmitt and John V. Ambler in Dec. 1944, and later by Frederick G. Novy, Jr. and others to the U.S. navy, none of them was allowed to be published at the time. The eruption included lichen planuslike patches, some of them suggesting the hypertrophic type, eczematous patches and occasionally exfoliative dermatitis. Most of the patients made a good, if at times slow, recovery on return to temperate climates. (See also Medicine.)

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(H. Fx.)

Desert Warfare

See TACTICS OF WORLD WAR II; WORLD WAR II.

Destroyers

See NAVIES OF THE WORLD.

Detroit

For Detroit, the history of the decade 1937-46 was affected strongly by events of the depression years immediately preceding. No major United States city had suffered so acutely from public and private bankruptcy, unemployment and racial unrest. In the general bank holiday of 1933, the city's two largest financial institutions (mergers of numerous banks) did not reopen. The resultant losses not only modified the economic position of many great families of Detroit, but the economic situation of the entire community. Interest and principal on the municipal debt of \$275,000,000 were defaulted, property values subject to local taxation declined from a high of \$3,774,000,000 in 1931 to \$2,240,000,000 in 1936, the collection of property taxes declined to 65% of the taxes levied in 1933, and municipal obligations were met with script or simply not met. Approximately one-fourth of the population received public relief; a large, newly arrived Negro population pressed sharply on restricted housing facilities and employment opportunities; labour in the city's principal industry, the manufacture of automobiles, was unorganized but discontented and ready for radical leadership and direct action.

Thus the economic improvement which began with the decade and continued with minor interruptions throughout World War II and the reconversion period was marked by the entrance of many new personalities into the commercial and industrial life of the city, serious labour difficulties, the injection of labour into local politics, and the further influx of Negroes, which resulted in a series of "incidents," some of major significance. On the other hand, property values were partially restored, the public debt was refunded at a favourable rate of interest, and public finances were placed on a fairly satisfactory basis.

Labour difficulties were precipitated in 1937 by "sit down" strikes in the principal automobile manufacturing concerns. For a few days these strikes reached epidemic proportions in all industries and the distributive trades. Serious bloodshed was probably prevented by the refusal of the governor of the state, Frank Murphy, to call out the national guard. The situation was finally met by negotiation and in some instances by police action. The judicial

approval of the Federal Labor Relations act, after strikes in which the new "slow down" was introduced, brought about the complete unionization of labour within the automobile industry. One important manufacturer (Ford) reversed its previous policy and granted complete recognition to the union. The war years witnessed numerous unauthorized ("wildcat") stoppages of work and some jurisdictional conflicts, but these were of small proportions and for limited periods.

During the decade, business activity reached an all-time high with a substantial increase in population. Peace brought an abrogation of labour's "no-strike" pledge and the introduction of another new labour technique, an embargo against a single manufácturing concern, while permitting its competitors to operate, coupled with a proposal to base wages on profits. This type of strike against the General Motors corporation lasted 137 days and was finally settled by granting substantially the same wage increase as in other important industries throughout the country. Because of numerous minor strikes and work stoppages among suppliers of parts and materials, reconversion of the automobile industry to a peacetime production was materially delayed. There was a decrease of white population, and it was estimated that all later growth in population was because of the influx of Negroes.

During the war period, the rapid conversion of the automobile industry to the production of munitions and the existence of comparative industrial peace resulted in a soaring output of war materials. Old plants were enlarged and new ones established in the metropolitan area, particularly for the manufacture of tanks and aeroplanes. As a result, Detroit earned deservedly the title of "the arsenal of democracy." At the close of World War II one large aircraft plant was transferred to a newly organized motor car manufacturing company. The company (Kaiser-Frazer) was not yet in important production at the end of the decade, but it had become a possible new competitor for the automobile industry's "Big Three."

Success in the industrial field prompted organized labour to enter municipal politics through the local unit of the C.I.O. Political Action committee. In 1937 a labour candidate, Patrick H. O'Brien, lawyer, prominent in politics, was entered for the office of mayor as well as five prominent labour leaders for the city council. In the resulting nonpartisan election all these candidates were defeated and, also, officials highly critical of the labour and relief attitude of the previous administration took control of the state. Two years later a labour-endorsed candidate, Edward J. Jeffries, Jr., was elected mayor, and the victory was given publicity as a seizing of the administration by radical labour.

The newly inducted mayor repeatedly affirmed independence of any faction, which proved to be the case. In 1945 the C.I.O. Political Action committee was again active in the mayoralty and councilmanic campaign. A national official of the C.I.O., Richard T. Frankensteen, was successfully nominated for the office of mayor, but was defeated in the subsequent election, as were all labour candidates for the council except one incumbent member. Yet the alliance of labour with the Democratic organization gave the combination victory in most partisan political contests, particularly in county elections and the selection of representatives for the state legislature.

During the decade the city government was well administered from a financial point of view. Most of the public debt, which had been refunded after the earlier default

in 1933, was re-refunded at a lower rate of interest, a current operating deficit was slowly eliminated, and a substantial surplus was set aside for public improvements to help counteract any postwar recession in industrial activity. During the first year of the postwar period it was impossible to undertake any important public construction work. The city, however, planned projects that exceeded those of any U.S. city except possibly New York.

Even under these circumstances, rising costs pressed on the relatively fixed real estate tax of the city, and it assumed leadership in a movement to secure a distribution of state revenue to local units of government.

In spite of pride in an effective nonpartisan local government, two graft scandals attracted attention during the decade—one in the county and one in the city government. A suicide note left by the wife of a petty gambler in 1941 precipitated a grand jury inquiry into official protection of gambling by county officials. As a result a number of county officials, including the prosecutor, sheriff and a number of minor personnel were convicted and sentenced to the state penitentiary. This investigation led to a similar inquiry into municipal conditions and resulted in the conviction of the mayor, several councilmen and numerous police officials. Proud of its reputation as a well-governed community, Detroit could only reply to critics with the statement that it convicted its dishonest officials. The investigator in the inquiry, Judge Homer Ferguson, was eventually elevated to the U.S. senate and took a promment part in postwar inquiries.

At the opening of the decade occurred the "Sweet incident" which resulted when a prominent Negro physician moved into a white neighbourhood. A mob threatened the Negro home, and shootings with several injuries resulted. The resulting court action was inconclusive. Later there were demonstrations when Negroes accepted a housing project located in a white neighbourhood. In 1943, the Negro-white antagonisms flared up again as a result of housing congestion, discrimination in certain war plants, unsatisfactory social conditions and the pre-empting of certain public recreation facilities by Negroes. A riot broke out in one of the city's parks and extended rapidly to the Negro district. The immediate cost was the loss of 34 lives, 1,000 persons injured and \$2,000,000 in property destroyed, with incidental losses from absenteeism and extra governmental costs.

The city administration established an inter-racial commission intended to measure the degree of racial tension and suggest possibilities of relief. Negro political interest swung sharply in favour of the Democratic-labour group.

(L. D. U.)

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Deuteron

See Physics.

De Valera, Eamon

De Valera (1882—), Irish statesman, was born Oct. 14, 1882, in New York city of Spanish-Irish parentage. After the death of his father, he was sent to County Limerick where he was brought up by his grandmother. A mathematician by profession, he became a member of the Gaelic league and was the only surviving leader of the Easter week rebellion in 1916. Sentenced to life imprisonment, he was amnestied the following year and became



Eamon de Valera conversing with Dr. Vincenzo Berardis (right), Italian minister to Eire, after the latter had presented his credentials in Dec. 1938

president of the Sinn Fein government. Re-arrested in 1918, he escaped in Feb. 1919 and went to the United States to raise funds for the Irish republic, of which he had become president.

De Valera, who became president of the executive council and minister for external affairs of the Irish Free State in 1932, issued in April 1937 the text of a proposed new constitution for Eire which was approved by a majority of voters in the general elections of the following July. When the new constitution came into effect, De Valera automatically became prime minister. At the start of World War II, he pledged Eire to "absolute neutrality." His vigorous opposition to extension of conscription to the six Ulster counties caused Britain to drop the proposal in May 1941. In the national elections of June 1943, his party, the Fianna Fail, lost its majority in the lower chamber of the Irish parliament. Although De Valera was re-elected premier on July 1, 1943, his failure to win a vote of confidence in the Dail Eireann in May 1944 caused him to call for dissolution of the chamber and new elections. In the balloting on June 1, 1944, the Fianna Fail won control of the Dail and on June 9, De Valera was re-elected. In a broadcast to the U.S. on Mar. 17, 1946, De Valera also explained that Eire had embarked on a policy of neutrality during World War II because it was the only course open to a small nation.

Devers, Jacob Loucks

Devers (1887—), U.S. army officer, was born Sept. 8, 1887, in York, Pa. Upon graduating from the U.S. military academy (1909), he was commissioned a second lieutenant in the field artillery. During World War I he was first an artillery instructor and later an executive officer at Fort Sill, Okla. He then spent five years as an instructor of

military tactics at West Point and was a division commander. In 1939 he became chief of staff in charge of mechanization of the Panama Canal defenses, and in 1941 commander of U.S. armoured forces at Fort Knox, Ky. He was made a lieutenant general Sept. 1942, appointed commander of U.S. forces in Europe May 1943, and deputy commander in the Mediterranean theatre the following December. Devers commanded Allied forces that landed in southern France (Aug. 15, 1944). A month later he was given command of the 6th army group comprising U.S. and French troops, relinquishing his post as deputy commander in the Mediterranean in Oct. 1944. The 6th army group participated in the all-out Allied offensive that ended in the collapse of the reich, May 7, 1945. Devers. who had been appointed to the temporary rank of a full general (March 13, 1945), became commander of the army ground forces, June 29, 1945. One of the many army men supporting the proposal for a unified army-navy command, Devers declared that he would be willing to serve under a navy officer if one were appointed chief of staff to a civilian secretary.

On Jan. 22, 1946, Devers was promoted to the permanent rank of major general. On May 17 of the same year he denied before a house military committee that he had called congressmen cowards. He created another semi-sensation with an article appearing in a French weekly, Nov. 1, 1946, which said that the U.S. was keeping "27 divisions ready for action no matter where, one minute after the alert."

Dewey, Thomas Edmund

), U.S. lawyer and politician, was Dewey (1902born March 24, 1902, in Owosso, Mich. Graduated from the University of Michigan, Ann Arbor, Mich., in 1923, he received his law degree from Columbia university, New York city, in 1925, and was admitted to the New York bar the following year. As U.S. attorney for the southern district of New York, Dewey attained nation-wide prominence for successful prosecutions of gangsters and criminals. Elected district attorney of New York county in 1937, he ran for governor the following year on the Republican ticket and was defeated by only 64,000 votes. Dewey was mentioned as one of the leading candidates for the Republican candidacy in 1940, but was among the losers in the unexpected nomination of Wendell L. Willkie. Two years later he ran again for governor of New York, this time winning. In 1944 Dewey again cast his hat into the ring for the Republican nomination for president and was named on the first ballot at the party's convention in Chicago, June 29. Although defeated in the election, Dewey received more than 22,000,-000 votes. While many had believed that his political star had declined with the 1944 defeat, Dewey re-emerged as a strong presidential possibility for the 1948 elections, particularly after his re-election as governor in 1946 by a 680,000-vote majority. A test of Dewey's popularity in that election resided in the fact that he carried New York city, generally heavily Democratic.

Diabetes

Throughout the world, diabetes had been found to occur more frequently in urban than in rural communities and still more than in sparsely settled regions. Yet even when reported mortality figures had shown an incidence in one section of a country to be one-fourth that in another, carefully conducted morbidity surveys proved the disease to be equally common when allowances were made for age distribution, sex, race, obesity, availability of medical supervision and accurate statistical reports. Thus, in

the "territories" of Argentina, the mortality rate in 1941 was 6.6 per 100,000, but in 1943 in Buenos Aires it was 15.0 per 100,000. In Guatemala, the rate was 0.7 per 100,-000 in 1943, but it was significant that there were some 300 physicians in that country, of whom there were about 220 practising in Guatemala City, with a population of about 220,000. Thus, there were only 80 physicians for the remaining 2,800,000 inhabitants, of whom some 70% or 75% were Indians. In the United States in 1940 the crude death rate in the urban part of the registration states was 32.2 per 100,000 in contrast to 19.3 in its rural areas, the excess of the urban rate over several years being approximately 67%. In one state, Arizona, the rate was 10 per 100,000. But when one took account of age, sex, availability for medical care and statistical evaluation, the morbidity of diabetes proved to be as frequent in Arizona as in the state of Rhode Island on the eastern seaboard, where the rate was 42 per 100,000, or four times as great. In fact, diabetes occurred with approximately the same rate among the Indians as in the remainder of the inhabitants.

Among Jews the incidence had often been considered as two and a half times that among gentiles, but data obtained in Berlin just prior to World War II, and in the Boston area through U.S. selective service examinations, suggested that this estimate was too high. Among the Irish in the United States, but apparently not in their home country itself, Northern or Southern Ireland, the diabetic frequency was above the average.

In 1938 the total number of diabetics in Germany was estimated at 300,000; in 1939 in England, according to R. D. Lawrence, 150,000 to 200,000. In the United States, estimates for 1946 ran between 575,000 and 625,000, but were calculated at 1,000,000 by E. P. Joslin for its 140,-000,000 inhabitants, or 1 in 140. To arrive at this figure, account was taken of the fact that many cases were never recognized; that in computing the mortality for the entire country the average death rate for the ten states with the highest mortalities was utilized as being more accurate than the average rate for the ten states with the lowest mortalities; that the statistically reckoned deaths from diabetes represented but two-thirds of those actually dying with but not from the disease (as had been proved by analysis), and thus the number of reported deaths had to be increased by one-half; and finally that the average duration of the disease was 15 years, and that this factor times the figure for total deaths of diabetics should be used in arriving at the total number of living diabetics.

In any calculations of incidence of diabetes, one must not forget that, in the most careful survey yet made, the frequency of diabetes varied from 1:2500 for those under 15 years of either sex to 1 in 70 males and 1 in 45 females for those 65 years of age and older, and that diabetic mortality had risen as a cause of death from 27th place in 1900 to 9th place in 1938 and to 8th place (7th barring accidental deaths) in 1943 in the United States of America.

Prolongation of Lives of Diabetics.—The lengthening lives of diabetics was generally recognized. For one private series of 3,234 fatal cases after Aug. 7, 1922, it rose on the average from 6.1 years to 14.1 years, or one diabetic year of life for each succeeding three years. The duration prior to the introduction of insulin in 1914–22 in this series was 6.1 years, but it rose to 11.3 years for the period Nov. 1, 1937–Dec. 31, 1939, and again to 14.1 years for the period Jan. 1, 1944–May 15, 1946. The average age at death of diabetics was 46.7 years until the introduction

of insulin; it rose quickly to 60 years in the period between that date and Jan. 1, 1930, and to 64.8 years between Jan. 1, 1937, and March 29, 1940, but was 64.5 years between that date and May 15, 1946. Obviously this increasing age at death could advance but little more, because it approached that of the non-diabetic population. The increasing duration of diabetes, however, could continue because of the lessened diabetic mortality, particularly of younger people.

Average Duration of Life Subsequent to Onset of Diabetes

Among Deceased Ex-patients								
Age Periods	Nov. 1, 1937-	Jan. 1, 1940-	Jan. 1, 1944–					
of Onset	Dec 31, 1939	Dec. 31, 1943	May 15, 1946					
	No. of Duration	No of Duration	No. of Duration					
	Cases Years	Cases Years	Cases Years					
All ages	1,229 12.4	1,354 13.3	651 14.1					
0 - 9	16 11.3	19 9.4	15 16.7					
10 - 19	32 9.0	39 12.7	31 13.2					
20 - 39	127 16.7	172 17.9	70 17.9					
40 - 59	673 13.9	700 14.8	328 16.2					
60 and over	380 8.7	424 9.3	200 9.3					

The statistics in the accompanying table are based for definite periods, but they represent statistics of duration gathered from fatal cases. How different, this might be from the average total duration of all in each group was

Laboratory class at the diabetic unit of the Hutton Residential school in Essex, Eng., training youngsters from 6 to 16 to do their own sugar tests and to administer their own insulin injections. The unit was formed as an answer to their special needs during wartime



shown by a comparison of the duration of diabetics for earlier periods. Thus, the duration for patients dying in the years 1898–1914 was 4.9 years, but including cases dying subsequently or alive in 1946, it was 9.6 years. The figures from 1914–22 similarly changed from 6.1 years for fatals in those years to 12.8 years when subsequent deaths and survivors were used for computation of the average duration of life. From 1922 to 1930, similarly, the duration changed from 8.1 to 14.9.

Despite the prolongation of the lives of diabetics generally and particularly of youth, the seriousness of the disease was demonstrated by the development of arteriosclerotic complications in the later lives of those who acquired the disease in childhood, i.e., under 15 years of age. In one series of 249 such cases of diabetes of 20 or more years' duration, there were 70% with such arteriosclerotic complications in the eyes, heart or kidneys. Another writer, reviewing a much smaller number of cases in another country, recorded even more serious findings and concluded that few if any such childhood diabetics would survive 20 years of diabetes with a good degree of health. Such a statement was unduly pessimistic, because 30% in the former series of 249 cases were in good condition. Nevertheless, the lesson was plain-that more aggressive treatment was required if the health of the 20-year diabetic child was to be preserved.

The U.S. public health service entered the field of diabetes in 1945. This national recognition of the importance and magnitude of the diabetic situation was fraught with great possibilities. Obviously the government would need better statistics regarding diabetes and not only would compile them, but inaugurate surveys to improve their accuracy. At the beginning of the decade 1937–46, estimates of the number of diabetics in the United States seldom reached 500,000; in 1946 they approached 1,000,000.

Physiology.—Research in many laboratories throughout the world continued to enrich knowledge regarding diabetes and related problems, although work of fundamental nature was of necessity curtailed somewhat during World War II. The outstanding advances are summarized below.

Endocrine Interrelationships.—In the several years just preceding the decade 1937-46, a long series of studies by B. A. Houssay and collaborators in Buenos Aires had shown that the anterior pituitary has a profound influence on carbohydrate metabolism and exerts a powerful antiinsulin effect. The results of this study were amply confirmed and extended by other investigators the world over. In certain species it was shown that hypophysectomy produces hypoglycaemia in normal animals and ameliorates the diabetic condition of depancreatized subjects. Houssay, and in the United States H. M. Evans and others, found that the injection of crude extracts of the anterior pituitary into normal animals caused hyperglycaemia and glycosuria. However, it remained for F. G. Young, working at the National Institute for Medical Research in London, to demonstrate conclusively in 1937 that by such a procedure, permanent diabetes was produced in normal dogs. In such animals, widespread destruction of islet tissue occurred and the insulin content of the pancreas became extremely low or essentially lacking. Following this, C. N. H. Long and F. D. W. Lukens in Philadelphia showed that removal of both adrenal cortices ameliorated the diabetic condition of departreatized animals. However, it was generally accepted that the role of the adrenal cortex is not as important in carbohydrate metabolism as is that of the anterior pituitary which appears to be dominant. The influence of the thyroid is even less direct but in suitably prepared animals, the administration of thyroid extract may produce a diabetic-like condition (Houssay). These findings led to much speculation as to the role of the anterior pituitary, adrenal cortex, thyroid and gonads in the origin of the diabetic state. It was generally acknowledged that an important, and without doubt fundamental, relationship to human diabetes existed, but direct application was not as yet possible.

Prevention and "Cure" of Experimental Diabetes .- Of great interest to patients and physicians alike was the finding by F. D. W. Lukens and F. C. Dohan, by C. H. Best and co-workers in Toronto, and by others, that under certain experimental conditions, varying with the species of animal, the diabetic condition resulting from the injection of anterior pituitary extract might be prevented by the simultaneous administration of insulin, or less effectively, by the feeding of a diet low in calories or high in fat or by the giving of phlorhizin. Furthermore, even though these measures were not introduced until diabetes had developed, "cure" of the condition could be effected provided the remedial measures were introduced early enough. i.e., before irreversible changes had taken place in the pancreas. Lukens pointed out that the only clear similarity of the action of these measures lay in the abolition of hyperglycaemia. He suggested, therefore, that the level of the blood sugar may play an important part in the pathogenesis of diabetes.

Formation and Breakdown of Glycogen.-In logical sequence to the above studies were the results of investigations carried out by C. F. Cori and associates in St. Louis. Cori showed in 1939 that, under the influence of an enzyme, phosphorylase, a polysaccharide indistinguishable from glycogen could be synthesized in vitro from glucose-1phosphate, even in the total absence of insulin. Later in Cori's laboratory it was shown that the activity of another enzyme, hexokinase, in the reaction of adenosine triphosphate with glucose to form glucose-6-phosphate and adenosine diphosphate was inhibited by anterior pituitary extract. This was accomplished either by adding anterior pituitary extract to the enzyme preparation in vitro or by injecting rats with anterior pituitary extract prior to the preparation of the tissue extracts. Insulin counteracted this inhibition either in the living animal or in the test tube, although insulin itself did not enhance hexokinase activity under the experimental conditions employed. It was suggested that insulin and anterior pituitary extract exert their action by affecting the sulfhydryl balance of hexokinase.

It may be that the chief function of insulin is to facilitate the hexokinase reaction, thereby admitting glucose to the metabolic system. However, final judgment could not be passed, and there may well be other sites of action. The results of certain studies suggested that, in the chain of catabolic steps leading from glycogen to pyruvic acid and finally to carbon dioxide and water, the site of action of insulin is higher than the pyruvic acid stage.

Radioactive Isotopes.—Only a beginning was made in the use of radioactive isotopes as tracer substances in the study of intermediary metabolism. Since such compounds possess identical chemical properties and yet have different physical properties caused by differences in atomic weight, an element in the diet, such as carbon, can be followed in metabolic processes in the body by incorporating a radioactive isotope as C¹¹ or C¹³, in substances fed or injected. The pathway of the carbon compound which has been introduced into the body can be traced by detecting the presence of the isotope in a particular site.

Formation of Ketone Bodies.—Particularly during the decade 1937-46, ideas changed greatly as to the chemical

steps by which ketone bodies are formed from fat. The Knoop theory of "successive beta oxidation" was discredited by most workers in favour of W. H. Hurtley's suggestion of "multiple alternate oxidation" or the "beta oxidation acetic acid condensation" hypothesis of E. M. MacKay and co-workers. W. C. Stadie did much to clarify concepts in this field. He furnished evidence to indicate that the catabolism of fat involves, at least in part, preliminary oxidation in the liver to ketone bodies. In the normal or the diabetic animal, the ketone bodies may be utilized for energy in the peripheral tissues without the aid of insulin and without simultaneous oxidation of carbohydrate. However, when the production of ketone bodies is abnormally great, as in uncontrolled diabetes, the capacity of the body for utilization is exceeded, and the excess ketone bodies accumulate in the blood stream and are excreted in the urine.

Lipotropic Substances.—Lipotropic substances are those which prevent or remove excessive fat in the liver. They are of great importance in maintaining normal fat metabolism in animals with experimental diabetes and probably also in human diabetes. Three such factors are recognized: choline and related compounds, as methionine; lipocaic; and inositol. The work with choline was initiated by C. H. Best in Toronto and that with lipocaic by L. R. Dragstedt in Chicago.

Alloxan Diabetes.—Three methods were available at the end of the decade for the production of diabetes in experimental animals: removal of at least nine-tenths of the pancreas; injection of extracts of the anterior pituitary; and the injection of alloxan, the ureide of mesoxalic acid. J. S. Dunn, H. L. Sheehan and N. G. B. McLetchie of Glasgow were the first to show that alloxan selectively destroys the beta cells of the islands of Langerhans of the pancreas. Permanent diabetes was subsequently produced in rabbits by C. C. Bailey and O. T. Bailey and in dogs by M. G. Goldner and G. Gomori. Alloxan diabetes was likewise produced in the rat, monkey, pigeon and turtle. Degenerative changes in the islet cells were detected as early as five minutes following the injection of alloxan, and microscopic sections of the pancreas at 24 hours usually revealed a collar of intact alpha cells at the periphery of the islets surrounding a mass of destroyed beta cells. Unless unnecessarily large doses of alloxan were employed, changes in organs other than the pancreas are usually minimal and reversible except that, as in the rat, tubular damage in the kidney might be found. Two drugs closely related to alloxan were shown to produce similar islet lesions and diabetes. O. Koref and associates of Chile reported that alloxantin produces diabetes in rabbits, and G. Bruchmann and E. Wertheimer of Jerusalem found that dialuric acid produced diabetes when injected into rats. Alloxan is an extremely reactive substance which can be detected in the blood for not more than five minutes after its intravenous injection and may be recovered from the pancreas within two minutes. Whether or not alloxan is an etiological factor in human diabetes is unknown, but highly suggestive is the fact that following its injection into animals there is a decrease in the reduced glutathione, cystine, and cysteine content of the blood. These changes in sulphur-containing compounds may well be of significance since certain enzymes important in carbohydrate metabolism are dependent upon sulfhydryl groups for their activity.

Pathology and Causes of Death.—Much attention was concentrated especially in experimental diabetes upon the

reversible lesions of the pancreas and the capacity of the pancreas to regenerate with corresponding emphasis upon the possibility of improvement and even cure of the disease. It was shown that the islets of Langerhans degenerate after injections of anterior pituitary extract, but that in experimental animals recovery from the lesions so produced may occur if insulin was used early enough. In contrast, a pancreatropic factor, derived from the anterior pituitary was also demonstrated which increases the number and volume of the islet cells.

Considerable variations in the amount of insulin present in the pancreas of different species were demonstrated. As methods for recovery of insulin improved, the possibility of clinical measurement of circulating insulin in the blood seemed less remote. A considerable number of tumours made up of islands of Langerhans were reported and many with successful surgical removal. The symptoms produced by these tumours are of great importance in diagnosis in relation to clinical medicine and psychiatry.

Improvements in treatment and increasing duration of life of diabetic patients brought changes in the causes of death. Prior to 1914, diabetic coma caused three-fifths of all deaths, but in the period 1944–46 only 3% of 651 deaths were due to coma. As coma disappeared, arteriosclerosis became more prominent so that in the years 1944–46, 67% of all deaths were due to arteriosclerotic cardio-renal vascular disease.

The Kidney in Diabetes.—The description of intercapillary glomerulosclerosis in diabetic patients with high blood pressure directed attention to the frequency and importance of kidney lesions in diabetes. Although arteriosclerosis, particularly of the eyes, heart and the legs, had long been one of the most outstanding findings in diabetic patients, this new lesion in the kidney seemed of special diagnostic importance. The lesion was described as deposits of hyalin in the kidney glomeruli, occurring much more frequently in its advanced form in diabetic patients than in nondiabetic patients.

Medico-Legal Aspects.-Medico-legal aspects of diabetes proved to be of importance in relation to (1) possible causation of the disease or its aggravation by trauma; trauma was only considered a cause of diabetes in rare instances when the trauma seriously injured the pancreas itself; (2) Special hazards of diabetes such as acidosis, infection and arteriosclerosis with their influence upon the occurrence of accidents and the healing of injuries; (3) Effects of insulin, particularly in overdoses; during hypoglycaemia patients may be confused, obstinate or wildly belligerent, and confusion with alcoholism may lead to serious errors; (4) Diagnosis of diabetes at autopsy. The most valuable diagnostic evidence was considered to be: changes in the islands of Langerhans, abnormal deposits of glycogen in liver and kidney tubules, and characteristic advanced lesions of intercapillary glomerulosclerosis.

Diabetic Coma.—Improvement in the results of treatment of diabetic coma continued during the decade. A striking decline in mortality occurred when insulin was used more aggressively during the first three hours of treatment. In the first few years after the discovery of insulin, patients treated in one hospital for diabetic coma received on the average only 83 units in the first three hours of treatment, and 12% died. Between 1940 and 1946, among 173 cases of diabetic coma treated in the same hospital, the average insulin given in the first three hours was 212 units; 3 deaths occurred, a rate of 1.7%. In this group were some unconscious patients who received from 300

to 1,000 units during the first three hours of treatment. The amount of insulin given in the first few hours of treatment had the greatest influence upon the results of treatment, and this was especially true in the presence of infectious complications.

Chemical alteration in the blood and urine during diabetic coma were studied particularly in relation to ketosis, dehydration and shock. Blood sugar levels from 500 mg. to 1,500 mg. per 100 cc. and concentrations of acetone bodies from 100 to 200 mg. per 100 cc. were reported in unconscious patients. Dehydration and shock, often with renal failure, were associated with a considerable loss of base, chiefly sodium and potassium in the urine with resultant deprivation of base in the tissue cells.

Patients profoundly unconscious were reported as in far greater danger than those who had not yet reached that stage. From 35% to 75% of such unconscious patients treated prior to 1940 died. The mortality in 39 unconscious patients in one series treated between 1940 and 1946 was reduced to only 10%.

Success in treatment of coma depended upon the early use of insulin. Secondly, dehydration was counteracted by the administration both intravenously and subcutaneously of normal salt solution in amounts up to 10% of body weight. The amount of fluid given in the first 24 hours varied with the extent of dehydration. A patient completely anuric received a litre per hour for 12 hours, but most patients with diabetic acidosis required not more than 3 to 5 litres in the 24 hours. The need for administration of food as soon as sufficient insulin had been given was met by oral or by intravenous feeding, as the patients' condition permitted.

Arteriosclerosis.—With the increasing length of life of diabetic patients, advanced occlusive arteriosclerotic complications became the outstanding feature of diabetic morbidity and mortality rates. Chronic renal disease, including intercapillary glomerulosclerosis associated with diabetic retinopathy, appeared increasingly important, especially in young patients with diabetes of long duration.

The heart became the chief site of advanced arteriosclerosis, and coronary disease the chief cause of death in diabetic patients. The striking feature of coronary arteriosclerosis in diabetic patients was found to be the almost equal distribution by sex in contrast to the excessive predominance of males in nondiabetic patients with angina pectoris and coronary occlusion.

Surgery and Diabetes.-Improvements in the results of surgery carried out upon diabetic patients were as remarkable as in nondiabetic surgery. The increasing duration of life of diabetic patients brought a larger number of patients into the age period where complications caused by peripheral vascular disease, neoplasms, prostatic surgery, etc., were more common. The introduction of the sulfonamides was an advance, but the use of penicillin even more strikingly improved the prognosis for surgery, particularly in carbuncles and infections of the extremities. Actually at one hospital the operative mortality was 7.3% for 3,551 operations from 1923 to 1941, whereas from 1942 to Jan. 1, 1946, the operative mortality fell to a new low point of 2.2% in 1,453 operations. In addition to the use of penicillin for the control of septic infections, the introduction of new methods for improving nutrition were of value in the group of seriously ill patients suffering from malnutrition. Long periods of uncontrolled diabetes not merely produced loss of weight, dehydration and frequently acidosis, but also significant losses in protein, base and disturbance in vitamin metabolism. Factors common in diabetics such as achlorhydria, diarrhoea and symptoms associated with the surgical complication itself often resulted in a patient's arriving at the hospital in a partial state of starvation. In addition, therefore, to control of the diabetes, the parenteral use of vitamins and particularly the treatment of hypoproteinemia were of mæterial benefit in the improvement of the surgical outcome. The former fear of surgery with its consequent postponement until the risks of surgery had greatly increased gave way to confidence, so that a diabetic patient was able to secure all the benefits of surgery provided he came to the surgeon at a sufficiently early stage of his condition and received proper diabetic management both before and after operation.

Pregnancy in Diabetes.—In any report upon advances in the treatment of pregnancy in diabetes, the statement of A. Bouchardat in 1875 that he had never seen a pregnant diabetic woman, and of B. Naunyn in 1907 that he had observed but one, should be recalled.

Obstetrical diabetes in the decade 1937-46 was a controversial problem. Two opposing views were held, namely, that the course of pregnancy in the diabetic woman is normal, or exactly the opposite, that no pregnancy is more abnormal than that of the diabetic. The latter view was maintained by Priscilla White of the Joslin Diabetic Group. She pointed out the obstetrical abnormalities in diabetic pregnancies, including an abnormal frequency of early spontaneous interruption of the pregnancy, preeclamptic toxaemia, breech presentation, ineffectual labour, failure of lactation, stillbirths and neonatal deaths. The foetus was found to be often large, oedematous and frequently developed a benign jaundice and malignant atelectasis. The liver and spleen showed changes not unlike those found in erythroblastosis. The placenta was often large or, quite the opposite, very small.

The production of the sex hormones, oestrin and progesterone, by the placenta appeared to be defective. As a result, fluid was retained in the body of the mother, in the foetus and in excess in the uterus. The loss of sugar in the urine of the mother was disproportionately great compared with the level of her blood sugar, favouring either hypoglycaemia or acidosis. Pregnancy was further complicated by the maternal ovarian deficiency and vascular disease.

All of these abnormalities contributed to the previously reported foetal mortality rate of 50% but in Dr. White's experience the imbalance of the placental hormones appeared to be the most important single harmful factor. In her series of 293 patients studied between Jan. 1936 and July 1946 there were 68 patients whose hormonal balance was normal; 97% of their infants survived; none was born prematurely and only one patient had preeclamptic toxaemia. Among 58 abnormal cases-abnormal so far as the balance of the sex hormones was concerned-31 infants died; 50% of the mothers had pre-eclampsia and 40% delivered prematurely. The deficient hormones, oestrin and progesterone, were supplied to the remaining 167 patients; 18 of the infants of these patients died, only 5% of the mothers developed pre-eclampsia and but 15%delivered prematurely.

Good treatment and control of diabetes with high carbohydrate diets (180 g. to 220 g.), high protein diets (2 g. per kg. of body weight) with little salt was indicated for pregnant diabetic women. Insulin should be administered several times during the day in addition to the initial dose of crystalline and protamine insulin usually administered before breakfast.

A timed delivery in the 38th week of pregnancy proved

desirable. Caesarean section was usually indicated to bring about early delivery. General anaesthetics and sedation had to be avoided because of their depressing effect upon infants' breathing. Spinal anaesthesia was preferred.

Hormones were usually administered by intramuscular injection daily in ascending doses from 5 mg. each of stilboestrol and proluton daily up to 30 mg. of each.

The infant of a diabetic mother was protected at birth with oxygen, incubation, drainage, suction of the upper air passages, stimulation and dehydration, even more than the child of the nondiabetic.

In summary, as a result of maternal, vascular and ovarian dysfunction, the course of the pregnancy in the diabetic is abnormal. Replacement of lacking sex hormones, oestrin and progesterone, brought about a change in foetal survival from the low level of 50% up to 90%. The maternal survival should be that of nondiabetic obstetrical experience. The only maternal death occurred 60 days after delivery.

Treatment.—The efficacy of insulin and its modifications, protamine insulin, protamine zinc insulin, globin insulin and other experimental insulins was shown by the lengthening duration of life of diabetics at all ages and by the spectacular fall in diabetic coma. In fact, insulin medication had become so effective a therapeutic agent that one should not overlook the fact that the increased carbohydrate, 150-200 g. at the end of the decade instead of 100-150 g. at its beginning, and more calories, consistent with the increased activities of the patient, also exerted a notable effect on the diabetes situation. A still higher carbohydrate diet and a correspondingly lower quantity of fat in the diet were not employed over sufficiently long intervals to warrant conclusions. Early and aggressive treatment of the disease following its onset frequently led to surprisingly good results. Insulin also allowed the patient to profit to the full by nondiabetic discoveries such as the sulfa drugs and penicillin. In short, the treatment of the disease per se changed little during the ten-year period. The prompt use of insulin in the first 3 hours instead of in the first 12 or 24 hours of diabetic coma was perhaps an exception. The condition of the long-duration case of diabetes beginning in childhood represented the crux of the problem. In 1946, 70% of these 20-year duration cases showed arteriosclerotic complications. Hepatomegaly in youth disappeared with the advent of protamine zinc insulin.

Protamine zinc insulin controls the blood sugar of most mild and moderately severe diabetics very well. With severe cases, however, its onset of action is not rapid enough to control the mid-morning glycaemia in many cases, which makes the injection of a supplementary dose of regular or crystalline insulin desirable.

Attempts to find an insulin which acts both quickly and for a prolonged period resulted in the use of insulin mixtures, modified protamine zinc insulin and globin insulin. Insulin mixtures were prepared by mixing larger amounts of crystalline (or regular) insulin with a smaller amount of protamine insulin either in an oversized vial or in a syringe before injection. A. R. Colwell found that a ratio of two parts crystalline to one part protamine controlled the diabetes in 85% of his patients. The resulting mixture was not buffered and possessed both rapid and longacting properties. It was claimed that by varying the ratio of crystalline to protamine insulin in the mixture, the amount of rapid and prolonged action in the resulting preparation could be controlled.

Modified protamine insulin, an experimental insulin, was buffered to neutrality and contained approximately one-fourth rapid action and three-fourths prolonged action. Evidence suggesting that the rapid insulin in this preparation might not be stable was found in that older samples might contain proportionally less free insulin than fresh samples. Efforts to make this insulin stable were continued by C. M. MacBryde.

Globin insulin, a clear acid preparation, made by combining globin from beef haemoglobin with insulin, has a more rapid but less prolonged action than protamine zinc insulin. Its tendency to produce frequent afternoon insulin reactions, unless a mid-afternoon lunch is taken, greatly limited the usefulness of this insulin.

Vitamins did not replace insulin and did not cure neuritis, but they were used freely if the slightest vitamin deficiency was detected and even prophylactically in the hope of preventing this occurrence. Vitamin deficiencies may occur in diabetics as in nondiabetics, but clinical deficiencies were not frequently seen. The average discharged diabetic diet in one large clinic had three times the amount of vitamins A and C, and optimal thiamin and niacin recommended by the Committee on Foods and Nutrition of the National Research Council. Despite this, supplementary vitamins were frequently prescribed, especially if the diabetic patient had any complications, such as neuritis or diarrhoea, or if the food intake for any reason was below normal. The increased capillary fragility commonly reported in diabetics was seldom corrected by vitamin C therapy. Whether the diabetic utilizes vitamins as well as the nondiabetic remained unknown, but it would seem advisable to give the diabetic a more liberal intake of vitamins.

A wider knowledge of medicine was needed in the treatment of diabetes because, by the end of the decade, diabetic patients were living so long that they were exposed to complications which the short time of duration previously did not allow. Deaths from cancer among diabetics, for example, had risen from 1.8% to 8.3%.

(See also Physiology.)

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Diamonds

World War II brought a major upheaval to the diamond industry-not in throttling it as the producer of a superfluous luxury, but by demanding more of its product than could be produced. Being dispensable as a luxury, the gem diamond received scant attention, and for the time being became little more than a by-product in the race for the recovery of its plebeian brother, the industrial diamond. The war quadrupled the demand for industrial diamonds, on top of a tenfold increase that had developed during the prewar decade, with the result that demand greatly exceeded production. In the United States alone, imports of industrial diamonds during 1941-45 were greater than the world output of all diamonds in the same years; hence it was evident that only a fraction of the war demand could have been supplied except for the large stocks of industrial stones that had been accumulated before 1930, when industrial uses absorbed only a small part of the output. These stocks, though large, were drawn upon so heavily that they were becoming depleted, especially in certain grades. That demand was expected to continue at a high level was evidenced by a marked expansion of output in 1945 in Belgian Congo, the chief producer of industrial stones, and by the fact that South African producers were preparing to reopen mines shut down in the 1930s because their output carried higher percentages of industrial stones than those mines kept in operation.

World Production.—Production data were difficult to secure from many countries during the war years. Table I presents the data as collected or estimated by S. H. Ball in *Minerals Yearbook*.

The 1945 output was a record figure, exceeding the 1940 high by almost 10%, and the 1944 total by 22%, because of heavy increases in Belgian Congo and South Africa.

Table I.— World Production of Diamonds									
(Carats)									
	1937 193	8 1939	1940	1941	1942	1943	1944	1945	
Angola	626,424 651,: 4,925,228 7,205,	620 8,360,000	9,603,000	5,866,000	0 6,018,236	4,881,000	800,000 7,540,000	786,000 10,386,000	
Gold Coast	1,577,661 1,296,7 913,401 689, 1,030,434 1,238,0	621 600,000	750,000	850,000	850,000	850,000	700,000	500,000 800,000	
SW. Africa	196,803 154,	35,470	30,017	158,422 46,578	56,420	302,329 88,000	909,000 154,000	1,141,240 156,000	
Tanganyika	238,606 235,0 102,233 144,6		325,000		300,000	52,998 275,000	90,667 370,000	11 <i>5</i> ,666 27 <i>5</i> ,000	
•				148,503		102,922	112,911	97,251	
Total	9,614,024 11,619,9	71 12,500,533	13,016,497	9,210,529	9,260,871	8,347,239	11,676,578	14,257,157	
Table II.—U.S. Imports of Diamonds (Carats or dollars) 1937 1938 1939 1940 1941 1942 1943 1944 1945									
Carats					1772	1745	1944	1945	
Cut	97,219 91,515 517,677 330,925	1 <i>5</i> 3,982 488,1 <i>54</i>	227,886 321,471	215,026 229,582	278,437 126,004	751,240 193,701	896,547 169,097	893,761 377,243	
•	390,173 1,397,398	3,570,111	3,809,856 6		11,207,003	12,173,918	12,656,823	10,792,186	
Cut	729,663 \$7,077,1 <i>59</i> 360,396 17,016,842 760,470 4,295,704		2,001,719 18	B,346,415	11,546,712 \$ 14,640,236 22,085,811	37,443,240 31,548,089 21,964,877	\$43,445,219 29,263,121 22,953,055	\$43,122,622 64,185,406 12,858,145	
Value per carat Rough	\$79.51 \$77.33	\$51.67	\$50.88	\$47.91	\$41.47	\$49,84	\$48,46	\$48.25	
Cut	57.68 51.42 3.58 3.08	56.17 2.74	68.44 2.91	79.91 2.17	116.19 1.97	162.41 1.80	173.06 1.81	170.14 1.19	



The Presidente Vargas diamond, third largest known at the time of its discovery, in uncut proportions, shown beside a ruler. Cutting operations began in New York city April 9, 1941, after a year of study by diamond experts

Sales of rough stones by the Diamond Trading Co., which normally handled about 95% of the world output, reached a record valuation of £24,500,000 in 1945, as compared with £9,151,200 in 1937, and £6,144,000 in 1940, the year in which distribution was disorganized by the German occupation of the Belgian and Dutch cutting centres.

Cutting.—With the German invasion of Belgium and the Netherlands, the extensive cutting industries centralized at Antwerp and Amsterdam were almost entirely disorganized. The occupation forces attempted to keep a small industry going, but with little success, since there were few skilled workers left and the supply of rough stones was limited to the few that could be obtained in French Africa or bought chandestinely in South America.

To replace the cutting facilities lost in the Low Countries, the small cutting centres already in operation in the United States, Great Britain, South Africa and elsewhere were enlarged, and new centres were established in Palestine and Cuba. Much of this expansion was made possible by the participation of operators and workers who had escaped from the Low Countries ahead of the German occupation, and in many cases operators were able to take with them their stocks of rough and cut stones.

There was a considerable revival of cutting in Belgium after the close of World War II, but progress in the Netherlands was not so good. Using the 1945 U.S. imports of cut stones as a gauge of the status of the cutting industry in various countries, the order was Palestine, Belgium,

Cuba, South Africa, Brazil and Great Britain, for weight of stones imported. The varying type of work done in the different countries was indicated by the average value per carat of the U.S. imports, the higher values indicating larger and better stones; on this basis, South Africa headed the list, followed by Great Britain, Cuba, Brazil, Palestine and Belgium. Belgium had long specialized in the cutting of small stones, but a postwar shift was under way to larger stones, as was indicated by an average value of \$139 per carat in 1945, against \$54 in 1939.

The growth of the cutting industry in the United States could be measured roughly by the importation of 896,547 carats of rough stones in 1944 and 893,761 carats in 1945, as compared with 153,982 carats in 1939; at the same time, imports of cut stones declined from 488,154 carats in 1939 to 169,097 carats in 1944 and 377,243 carats in 1945. In 1939, the value of the rough imports was close to \$80 per carat; in 1945 it was only \$48, indicating the handling of a much larger proportion of smaller stones by the domestic cutting establishments.

United States Imports.—The United States remained the world's largest buyer of gem diamonds, with the highest values occurring in periods of high prosperity and easy money, as was to be expected with a luxury product. Even during the war years, the imports of gem diamonds were kept at a high level, especially after 1943. After 1933 the weight of industrial stones imported had greatly exceeded that of gem stones, but of course the value was much lower. Imports for 1937–45 are shown in Table II. (See also Mineralogy.) (G. A. Ro.)

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Diatomite

Sales of diatomite in the United States increased from an average of 93,215 short tons in the period 1936-38 to 174,957 tons in 1942-44, with 1945 exceeding the 1942-44 level. Production was mainly from California and Oregon; other western states producing diatomite included Idaho, Nevada, Washington and Arizona, while in the east Florida and New York contributed small amounts. Use as a filter aid accounted for over half of the consumption, fillers for one-fifth and insulation for one-eighth.

Diatomite was produced in at least 25 countries, in most cases not exceeding a few thousand tons. After the United States the largest producers were Denmark, Germany, Japan and Algeria, with prewar outputs of 20,000 to 100,000 tons. (G. A. Ro.)

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Dicourmarin

See CHEMISTRY.

Dictatorships

See Communism; Fascism; Germany; Italy; Japan; Rumania; Spain; Union of Soviet Socialist Republics.

Diesel Engines

See ELECTRIC TRANSPORTATION.

130 Dietetics

As the science of nutrition became established, the need for its application to the problems of feeding individuals and groups was apparent. In answer to this need, dietetics as a field of specialization was developed. During the decade 1937-46 it grew into a diversified field of work concerned with food and nutrition and such related activities as diet therapy, administration and management, community and professional education. The advances in dietetics, however, were directly commensurate with and dependent on the many brilliant discoveries in the field of normal nutrition. The isolation and synthesis of vitamins and amino acids permitted fundamental research which was basic to an understanding of normal nutrition. With this basic information, it was possible to study the interrelationships in metabolism. As a result, a new concept was presented of the need for complete nutritive efficiency both in health and disease.

With the acceptance of the concept that the feeding of the sick should be based on an adaptation of the normal diet, that simple phrase—feeding people—broadened steadily in significance. The field expanded to encompass not only all the food services of the hospital, but also outpatient services, public health, industry, restaurants (both commercial and industrial), schools and colleges, day nurseries, clubs, summer resorts, air services, the armed forces and the Veterans' administration facilities. The dietitian dealt with everything pertaining to the food department—planning, purchasing, food preparation and serving, care and purchase of equipment, employment of staff, cost accounting and instruction.

Diet Therapy.—One of the most far-reaching contributions was the development of more reliable tools for the quantitative evaluation of dietary requirements and the food intake. With improved methods for the chemical determination of nutrients, a substantial amount of evidence was collected giving gross indications as to the nutritional requirements and the composition of the food intake.

In the field of preventive medicine, studies resulted in a further clarification of the normal requirements during pregnancy, growth and old age. A gross guide to these new recommendations for various age groups was published in the Recommended Dietary Allowances, revised in 1945 by the Food and Nutrition board of the National Research council. This council was representative of experts in the specialized fields of nutrition in the United States and elsewhere. The value of these recommendations was fortified by the concurrent development of adequate tables containing representative values on food composition suitable for use in dietary calculations. New data on food composition were also compiled for African, Mexican and oriental foods.

In therapeutic medicine, the problems studied in connection with wound healing and with recovery from physical trauma and shock, as well as from fractures, burns, infections and starvation, resulted in many new discoveries regarding the value of a high protein diet. In studying the problems of convalescence, the use of a high protein diet was found to bring about a marked increase in the rate of recovery. This observation necessitated a reevaluation of the protein content of many hospital diets. In a re-study of cirrhosis of the liver, it was shown that dietary factors are of importance in pathogenesis and that the course of such diseases is benefited by feeding a diet

rich in protein and the vitamin B complex. In addition, work by Paul R. Cannon and associates indicated a direct correlation between the level of protein intake and the antibody mechanism. In fact, the level of protein intake was shown to determine both the acquisition and retention of specific resistance.

Where a high protein diet of 150 gm. or more daily was necessary, foods which contained concentrated amounts of protein were used. In some cases, protein hydrolysates provided a further source of protein. Suggested recipes and formulas for high protein diets were compiled by the Diet Therapy section of the American Dietetic association together with approximate values of protein supplements used. The compilation included formulas for high protein tube feedings, jejunal feedings and nasal feedings. Recipes were also included for the use of high protein foods in beverages, soups, candy, cookies, desserts, meat, bread and entrées.

With the use of improved methods of vitamin assay, it was discovered that the bacterial flora of the intestinal tract provide a significant source of vitamins of the B complex. However, the synthesis of vitamins by intestinal micro-organisms was found to be influenced in many ways. Certain changes in the internal environment were found to block intestinal synthesis entirely; on the other hand, certain factors, particularly food nutrients, were found to be favourable to the growth of bacteria. With a new appreciation of the complexity of the interrelationships of nutrients and the influences of these nutrients on bacterial flora, there was an added incentive for the use of natural rather than refined foods.

Another development of practical significance was the result of research on the acceptability of foods. It was much easier to formulate diets for optimum nutrition than to ensure the use of such diets by the patient. Every dietitian inescapably acquired the knowledge that it is not so much what goes on the plate as what goes into the stomach that counts—thus the increased emphasis on the selection and preparation of foods to meet the demands of varying food habits and tastes. Studies by the Committee on Food Habits of the National Research council indicated that still greater recognition was needed of the role which food plays in the religious, cultural, social and emotional life of the individual.

Administration and Management.-Dietitians entered the hospital organization primarily as teachers employed to teach nurses how to prepare the foods then believed to be necessary for sick people and to teach what was termed "diet in disease." Their sphere of activity in the beginning was limited to the diet kitchen. As the newer knowledge of nutrition became better understood and more widely accepted, and as educational facilities for the adequate training of dietitians became enlarged and strengthened, the dietitian's sphere of activity widened in scope. From teachers of nurses only, and from the small diet kitchen, dietitians advanced to administrative responsibilities concerned with food service to all patients and personnel. Thus, from positions limited in scope and responsibility, dietitians advanced to positions as heads of major departments directly responsible to the superintendent of the hospital. Large financial responsibilities, as well as those concerning health and social well-being, passed to the dietitian, who might spend from one-fourth to one-third of the total hospital budget.

Accompanying the greatly expanded industrial production program during World War II was a recognition on the part of management that the worker's health, and his or her presence on the job were matters of great concern.

As one measure toward greater employee efficiency, many industrial plants through their industrial relations division opened cafeterias for the use of all of their employees. Dietitians were employed by some to carry full administrative responsibility; others provided this food service through concessionaires, with dietitians as nutrition advisers. Some industries operated their cafeterias 24 hours a day so that all shifts could take advantage of good food served at low cost. The basic activities in administration and management included: general departmental policy making; hiring, training and maintaining a working force; planning work schedules and work procedures for all employees of the department; quantity food production, including menu writing and supervision of work procedures in the kitchen, bakery, pantries and other production units; financial management, including budget making, the maintenance of a food control system and a system of adequate reports and records; evaluation of the department as it affected patients, staff, personnel and tradespeople; and buying or requisitioning food and equipment by specification.

New materials for construction, new methods of construction and equipment with new purposes resulted from the necessity of meeting the needs of the wartime emergency. Many of these innovations were incorporated for civilian use.

New food processes also resulted from the uses during World War II. The use of precooked frozen foods by the navy air service proved the efficiency of this type of food processing. This development appeared likely to receive general acceptance in the management of food service departments. Improvements were also made during the war on dehydrated and canned foods which were of sufficient value to carry over into civilian use.

Community Nutrition.-At the same time that the dietitian was finding a place in the hospital organization and the science of nutrition was being developed by research workers, it became increasingly evident that scientific nutrition had as much importance in the maintenance of positive health as it had in the treatment of disease. The newer knowledge of nutrition, as it was developing, placed more emphasis on the need of an adequate diet for all people. Thus educators, quick to see greater opportunities for professionally trained people as this broader concept of nutrition service was being accepted, realized that the dietitian whose major emphasis in training was in the field of normal nutrition and dietary administration could serve usefully in public health services. The concept of adequate nutrition as a health and an economic factor in family life meant that the nutritionist was eligible for work in public and private health and welfare agencies, to interpret nutritional principles for individuals and groups. Because federal funds in the U.S. granted under the Social Security act and administered by the children's bureau of the department of labour were available to state, district, county and local health agencies for the enlargement of services to mothers and children, the nutritionist in these agencies worked in the division of maternal and child health. Formal nutrition teaching and consultant work took a major part of the nutritionist's time. Nutritionists taught in clinics, mothers' clubs and occasionally in public schools; they also taught professional workers in related fields of work, such as public health nurses, families and individuals requiring help.

During the war, the importance of nutrition in the prevention of disease was clearly demonstrated. The high level of wartime health in Great Britain was attributed in large part to the British nutrition program. Sir William

Jameson, Chief Medical Officer of the British Ministry of Health, gave credit to food planning for keeping the infant mortality rate the lowest on record and for the absence of serious epidemic disease despite bombings, mass evacuations and the strain of war.

In the United States, the nutrition programs branch of the War Food administration co-ordinated all nutrition activities. Representatives of agriculture, welfare agencies, community groups and health officers were brought together under this program. With the use of food controls, a higher nutritive content of the diet and a more equitable distribution of food resulted. A higher nutritive content was also due to the continuance of the enrichment of flour in the U.S. Thiamin, riboflavin and niacin as well as iron were added to refined white flour to bring it up to levels approximating those in whole wheat flour.

The continuance of the school lunch program with federal and state support in the U.S. also provided further insurance of adequate nutrition for children.

Nutrition surveys indicated that malnutrition was most prevalent among low-income groups. The congress of the U.S. made it possible for the public health service to set up demonstration units through the use of "nutrition teams" made up of a medical officer, a public health nurse, a dietitian or nutritionist and a biochemist, fully equipped with a mobile laboratory. The purpose of the mobile unit was to make nutrition appraisals and to develop methods and procedures particularly adaptable to health departments.

It was significant that the Food and Agriculture organization was the first permanent international body to develop from the wartime co-operation of the United Nations, being an outgrowth of the first United Nations Conference on Food and Agriculture at Hot Springs, Va., in 1943. It was recognized that each country should be responsible for providing its people with the food needed for life and health.

* * *

With the increased responsibilities for the dietitian went increased educational requirements; and with the increased educational requirements and the increased job responsibilities came recognition through the granting of professional status. The passage by the congress of the U.S., of Public law 828 (77th congress) of Dec. 22, 1942, gave new recognition and increased opportunities to dietitians. This bill granted relative rank and military status to dietitians assigned to the medical department of the army. Public law 350 (78th congress) of June 22, 1944, gave the dietitian full military rank. A qualified dietitian therefore was commissioned in the army of the United States with the rank of second lieutenant, eligible for promotion to the rank of first lieutenant. A few dietitians received the rank of captain and the highest ranking officer was a major.

In June 1944, the war department announced that 1,300 dietitians had been appointed for service in army hospitals. These dietitians were on duty in all theatres of operation, on hospital ships as well as in general, regional, station and convalescent hospitals in the U.S. Professional status was also accorded to dietitians in the Veterans' administration and in the U.S. public health service.

Lacking a legal registration of dietitians in the United States or a state examination for admission into the profession, it became common practice among professional organizations to accept as qualified only those dietitians

whose education and experience met the membership standards of the American Dietetic association. The movement toward clarifying the status and qualifications of specialists in dietetics and nutrition extended to other coun-

During 1945, the Board of Registration of Medical Auxiliaries in England published the first Register of Dietitians. (See also BIOCHEMISTRY; ENDOCRINOLOGY; VITAMINS.)

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Dilantin

See Nervous System.

Dill, Sir John Greer

Sir John Dill (1881-1944), British army officer, was born at Belfast, N. Ireland, Dec. 25, 1881, and educated at Cheltenham college, Cheltenham, Eng., and at the royal military college, Sandhurst. He entered the army in 1901, was a brigadier major at the start of World War I, and emerged from that war with the rank of brigadier general and the D.S.O. for bravery. He was made lieutenant general in 1936. Sir John was commander of British forces in Palestine, 1936-37. In early 1940 he went to France as commander of the 1st corps of the British expeditionary force, but was recalled to London on May 26 of that year to become chief of the British general staff. Sir John assumed his new task at a dismal period in British fortunes. The Norwegian expedition had ended in disastrous failure, and the Allied armies were helpless before the mighty German blitzkrieg then rolling through France.

After the fall of France, he started to rebuild the British army, and by the time of his retirement in Dec. 1940 it was again an instrument of military strength. In Dec. 1941 he was appointed governor of Bombay. Subsequently Sir John, who was a field marshal, was named head of the British representation on the combined chiefs of staff (U.S. and Great Britain) in the United States. He died in Washington, D.C., Nov. 4, 1944.

Diodrast

See X-RAY.

Diphtheria

See EPIDEMICS AND PUBLIC HEALTH CONTROL.

Diplomatic Services

See Ambassadors.

Disaster Loan Corporation

See RECONSTRUCTION FINANCE CORPORATION.

Disasters

The following is a selected list of accidents and disasters for the years 1937-46 inclusive, with the loss of life and property in each. Disasters that resulted from purely military or naval action in World War II will be found by date in Chronology of Events, 1937-46.

Disasters of 1937

Aviation

- 6 Lakehurst, N J. German airship "Hindenburg" destroyed by fire Fiftysix of 97 occupants killed.
- July 28 Near Brussels. Dutch aeroplane struck by lightning. Fifteen occupants killed.
- Aug. 3 Wreckage of Pan-American seaplane discovered by U.S. navy plane 20
- mi. off coast of Colombia. Fourteen passengers missing.

 Aug. 12 Russian aeroplane carrying Sigismund Levanevsky, "the Soviet Lindbergh," and five assistants lost in Arctic after crossing North Pole in effort to pioneer a plane route to the United States for passengers and
- freight. Search by Sir Hubert Wilkins and others unavailing.

 Oct. 17 Chalk Mountain, Wyo. Aeroplane crashed. Nineteen killed.

 Nov. 6 Near Ostend, Belgium. Aeroplane from Cologne to London hit chumney of factory. Eight passengers and three of crew killed, including five members of former ruling family of Hesse.

Fires and Explosions

- Jan. 17 Explosion of sulphuric acid on Canton-Hong Kong train Eighty killed, 50 injured.
- Feb 13 Antung, Manchuria. Theatre fire, 658 bodies recovered.
- Mar 18 New London, Tex. Explosion of natural gas in school. Four hundred
- and thirteen children and 14 teachers killed.

 2 Staffordshire, England. Explosions in coal mine. Thirty killed, many injured

Motor Traffic

- Jan 25 Florida motorbus from Miami to Tampa overturned in canal. Seventeen of 32 occupants drowned.
- Mar. 24 Salem, Ill. Motorbus burst tire. Lighteen killed, five injured.
- Oct. 22 Mason City, Ia. Train struck school bus. Nine killed, 21 injured.

Natural Disasters

- Jan. 22 In Mississippi, Allegheny and Ohio valleys. Disastrous floods began, causing an estimated 900 deaths.
- Jan. 29 Northern Europe. Violent storms. Loss of life exceeded 100. Many ships wrecked.
- May 27 Tialpujahua, Mexico. Cloudburst washed mine tailings onto dwellings. One hundred and sixty-eight reported dead.
 Oct. 28 Dmeir, Syria. Cloudburst overwhelmed many houses. One hundred
- missing.

Railroad

- Mar. 13 Corquoy, France. Express derailed by tree fallen across tracks. Fifteen

- killed, 20 injured.

 July 17 Delhi-Calcutta express derailed. One hundred and seven persons killed.

 July 29 Paris-St. Etienne express wrecked. Thirty killed, 40 injured.

 Sept. 5 Neuss, Germany. Train wreck. Fifteen Catholic pilgrims killed.

 Dec. 10 Castlecary, near Falkirk, Scotland. Railway collision. Thirty-five killed, 63 injured.

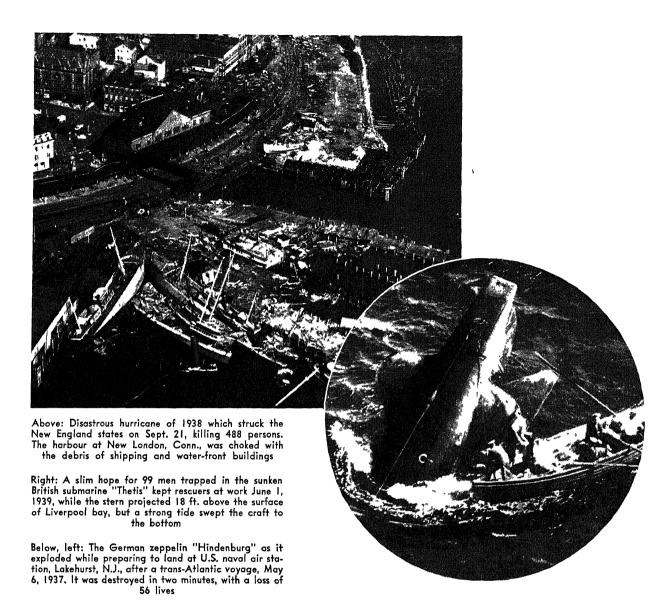
- Sept. 25 Alexandria, Egypt. Twenty-two persons killed and many injured in a crush of crowds to honour King Farouk.
- Oct 25 United States. Distribution of new drug, elixir of sulfanılamide, accompanied by 46 deaths.

Disasters of 1938

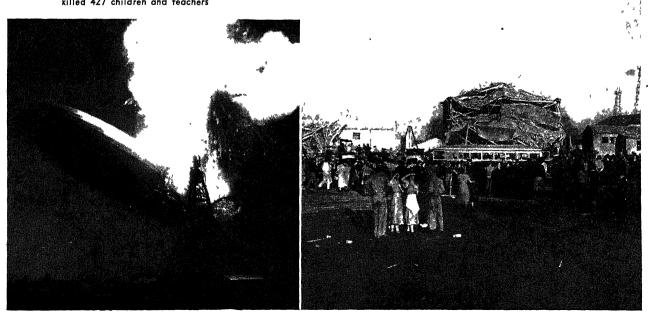
- Jan. 11 American Samoa. Capt. Edwin C. Musick, first pilot of the transpacific clipper planes, and crew of six killed in apparent attempt to make emergency landing in Pacific.
- Feb. 2 San Pedro, Calif. Collision of two U.S. navy bombing planes killed 11 in night practice manoeuvres.
- Mar. 30 Waianae, Oahu Island, Hawaiian Islands. Crashes of two U.S. navy bombers on scouting duty in war practice manoeuvres killed 11.

 April 30 Italy. Nineteen killed in crash of Italian plane of the Ala Littoria line on
- Mt. Maranola in fog. Nearly \$1,000,000 in jewellery was destroyed in flames.
- May 24 Cleveland, O. United Air Lines passenger plane crashed apparently because of simultaneous failure of both motors, killing ten passengers
- July 14 Rome. Italian air liner "I-Volo" plunged into sea off Sardinia. Twenty killed.
- July 24 Bogotá, Colombia. Fifty-three killed, many injured, when stunting military aeroplane fell into grandstand during military review.

 July 29 Pacific ocean, east of Samar Island. Hawaii clipper on flight from Guam
- disappeared with six passengers and nine crew members. Navy search abandoned Aug. 5.



Below, right: Ruins of the New London, Tex., public school, where a gas explosion on March 18, 1937, killed 427 children and teachers



Aug. 10 Near Debrecen, Hungary. Hungarian passenger plane fell after leaving aviation show; 12 killed.

Aug. 13 Kehl, Germany. Czech passenger plane hit mountain top in fog and exploded; 16 killed.

Aug. 18 Varese, Italy. Italian seaplane crashed while taking off; 14 killed.

Aug. 24 Tokyo, Japan. Fifty-eight killed and more than 100 injured when two planes collided and set fire to iron foundry.
 Oct. 1 Near Spluegen pass, Switzerland. German air liner with ten passengers

Oct. 10 Near Soest, Germany. Belgian air liner crashed and burned; 20 killed.

Nov. 4 St. Helier, Jersey, England. Crash of passenger air liner killed 14.

Nov. 26 Near Bathurst, Gambia, Africa. Crash of German transport plane on

experimental flight killed 11.

Nov. 29 Off Point Reyes, Calif. Lost transport liner landed in sea and was beached on rocks; five of seven passengers drowned.

Fires and Explosions

April 23 Grundy, Va. Explosion in Keen mountain coal mine killed 54.

May 16 Atlanta, Ga. Thirty-four lost lives in fire which destroyed Terminal hotel.

Oct. 28 Marseilles, France. Fire in hotel and store during Radical Socialist congress killed 73.

Nov. 6 Oslo, Norway. Fire in studio of court photographer killed 29.

Nov. 12–16 Chang-sha, China. Fire razed city, killed 2,000.

Nov. 18 Hospitalet, Spain. Explosion and fire in Loyalist munitions factory killed approximately 400.

Feb. 13 Sydney, Australia. Nineteen were drowned when a ferryboat carrying 150 capsized.

Motor Traffic

1 Near Salt Lake City, Utah. Twenty-three children and driver of school bus killed in collision with train.

Feb. 18 Rodessa, La. Twenty-five killed in tornado. Mar. 2 Los Angeles, Calif. Floods and landslides in Los Angeles and 100 other communities in five southern California counties caused deaths of 95, and approximately 100 reported missing. Number of homeless estimated at 20,000 and property damage at \$60,000,000.

Mar. 15 U.S. Middle West. Twenty-two killed in tornadoes in Illinois, Missouri, Iowa, Alabama, Georgia, Tennessee and Arkansas.

Mar. 30 U.S. Middle West. A tornado which swept across parts of Arkansas,

Oklahoma, Kansas, Missouri and Illinois killed 36.

April 7 Alabama-Georgia. Tornado and floods caused deaths of 27.

April 20-21 Turkey. More than 300 killed and 50,000 made homeless by earthquakes in central Anatolia in an area reaching from the Black sea almost to the Mediterranean.

June 18 Honan province. Chinese refugees from Yellow river flood estimated by Japanese at 700,000.

6 Kobe, Japan. More than 871 drowned or missing in floods

July 20 Kweichow province, China. More than 2,000 dead and injured after several days of floods.

Sept. 1 Tokyo and vicinity. Heaviest typhoon in Japan since 1905 killed at least 175.

Sept. 21 Northeastern U.S.A. Hurricane followed by floods and tidal waves killed 488 in Rhode Island, Massachusetts, Connecticut, New York, New Jersey, New Hampshire, Vermont and Quebec. Rhode Island, with more than 300 dead, was hardest hit by the storm, which was the worst in the recorded history of the northeastern states.

Sept. 29 Charleston, S.C. Thirty-one killed, more than 200 injured in tornact.

Oct. 21 Tokyo and Yokohama. Typhoon killed 226, injured 590, and left 35,000 homeless.

Nov. 2 Castries, St. Lucia, British West Indies. More than 200 killed or missing in series of mountain avalanches.

8 Philippine Islands. More than 300 killed in typhoon.

Dec. 17-18 Central Anatolia, Turkey. Undetermined number of persons killed in series of earthquakes.

June 19 Miles City, Mont. Forty-seven killed and approximately 65 injured when bridge over flooded Custer creek collapsed under the "Olympian," de luxe passenger train of Chicago, Milwaukee, St. Paul & Pacific rail-

July 30 Near Balaclava, Jamaica. Fifty-two killed, 70 injured in railway wreck. Sept. 25 Near Barcelona, Spain. Sixty-five killed, 200 injured, in head-on collision of trains.

Dec. 19 Barbacena, Minas Gerais, Brazil. Head-on collision of freight and passenger trains killed approximately 90.

Dec. 21 Near Mexico City, Mexico. More than 40 killed in train wreck.

Dec. 25 Near Kishinev, Rumania. Approximately 100 killed, 350 injured in collision of passenger trains.

Disasters of 1939

Aviation

Feb. 24 Near Nice, France. German plane with 12 nazi army officers aboard

crashed in Alps; all were killed. Mar. 18 Near Alder, Wash. Experimental substratosphere transport liner broke apart during test flight; ten killed, including two members of Dutch aviation mission.

May 8 Guayaquil, Ecuador. Crash of military plane in crowded street set fire to surrounding buildings; at least 25 killed, including pilot.

Aug. 13 Rio de Janeiro, Brazil. Fourteen killed, including Prof. James Harvey Rogers, when "baby clipper" plane plunged into harbour and struck dry dock.

Fires and Explosions

Mar. 1 Hirakata, Japan. Approximately 200 killed, 200 injured in explosion of army arsenal.

May

army arsenai.

Halifax, Nova Scotia. More than 30 died in hotel fire.

Near Tokyo, Japan. Eight factories destroyed by series of explosions; at least 11 killed, 260 injured, 30 missing.

Peñaranda de Bracamonte, Spain. Approximately 100 killed, 1,500 injured in explosion of munitions factory; town was virtually demolished. July 10

July 14 Providence, Ky. Twenty-eight coal miners died in explosion.

Oct. 27 Dunfermline, Scotland. At least 35 miners killed in colliery explosion. Nov. 13 Lagunillas, Venezuela. Town destroyed by oil fire; approximately 200 dead or missing.

Dec. 13 Near Brachto, Rumania. Explosion in cellulose factory killed more than 60.

Marine

Feb. 2 Bungo strait, Japan. Japanese submarine "I-63," with crew of 87 aboard, sank after collision; 6 were rescued.

aboard, sank after collision; 6 were rescued.

Feb. 8 Atlantic ocean, 1,500 miles east of New York. British freighter "Maria de Larrinaga" sank with 37 aboard.

May 23 Off Hampton Beach, N.H., U.S. submarine "Squalus" sank in Atlantic with 59 men aboard; 33, including Lieut. O. F. Naquin, the commander, were rescued May 24 and 25, and brought to surface in rescue bell; 26 were trapped and drowned.

June 1 Liverpool bay, England. British submarine "Thetis" sank with 103 men aboard; four escaped through hatch; rescue attempts failed after protuding stern of submarine sank to bottom before it could be out open

truding stern of submarine sank to bottom before it could be cut open or held fast at surface; 99 dead.

June 15 Cam-ranh bay, French Indo-China. French submarine "Phenix" disappeared after dive, with 71 aboard. No trace of craft, except oil slick

on surface, was found.

Aug. 23 Off Ilhéos, Bahía, Brazil. Coastwise steamer "Itacaré" foundered near

port; at least 30 drowned.

Dec. 12 La Perouse (Soya) strait, Japan. Soviet steamer "Indigirka" wrecked in storm; 700 believed dead; approximately 400 rescued.

Dec. 25 (?) Black sea. Turkish ship "Kilizilirmak" sank in storm with entire crew of 20; Greek steamer "Astrea" lost with crew of 14 aboard.

Motor Traffic

Mar. 29 Near Jackson, Miss. Fourteen died when 11 motorcars plunged into swollen creek through gap in highway caused by washout of bridge.

Natural Disasters

Jan. 24 South central Chile. Earthquake devastated area of approximately 50,000 square miles. Estimated death toll was 30,000, mostly in Concepción and Chillan.

Mar. 25 Near Bareges, France. Avalanches in Pyrenees killed 28; others missing. Apr. 15-16 Texas, Louisiana, Arkansas, Oklahoma. Tornadoes killed at least 40.

5 Northeastern Kentucky, U.S.A. At least 75 drowned, others missing in "flash" floods from swollen mountain streams. July

Northern China. Vast areas under flood waters; approximately 10,000,-000 persons homeless, starved or drowned.

Sept. 22 Vicinity of Smyrna, Turkey. At least 300 killed in earthquake.

Dec. 27 Northern Turkey. Earthquakes devastated wide regions in eastern and

northern Anatolia; casualties estimated at more than 100,000 killed or injured; city of Erzingan completely destroyed, with more than 15,000 deaths; floods later increased toll of dead.

Railroad

Feb. 11 Near Barcelona, Spain. Runaway express crashed into local train; 35 killed, more than 100 injured.
 April 13 Near Queretaro, Mex. Train wreck killed 28 outright; others died

April 18 Near Question, New Annumer and April 18 Near Elko, Nev. Streamliner "City of San Francisco" wrecked after passing over rail that had been bent in and spiked down; 24 killed, 113 injured.

Oct. 8 Berlin, Germany. Twenty-two killed in collision of trains.

Nov. 13 Near Oppeln, Germany. Train wreck killed 43, injured 60.

Dec. 22 Near Magdeburg, Germany. At least 132 killed, 109 injured, in collision of two express trains; 99 killed, 40 injured in another wreck near Friedrichshafen.

Dec. 30 Near Naples, Italy. Frozen switch caused train wreck in which at least 29 were killed, 100 injured.

Disasters of 1940

Feb. 27 Near Bucaramanga, Colombia. Eleven were killed when a passenger plane crashed into a mountain.

Mar. 17 Stromboli island, Italy. Fourteen were killed when the Italian air liner "I-Sutro" crashed against a volcano.

June 17 Bellerose, N.Y. Eleven army officers and men were killed when two bombing planes collided.

Aug. 23 Near Mt. Gaina, Transylvania. A passenger plane on the way from

Bucharest to Vienna crashed, killing the 12 passengers and the crew of three.

Near Lovettsville, Va. A plane of the Pennsylvania air lines crashed, Aug. 31 killing 21 passengers, including Sen. Ernest Lundeen of Minnesota and the crew of four.

Nov. 4 Near Salt Lake City, Utah. Ten persons were killed when a plane crashed into the side of Bountiful peak in the Wasatch mountains.

Nov. 8 Rio de Janeiro. Nineteen persons were killed when a passenger plane

collided with another plane and fell into Botafogo bay.

4 Chicago, Ill. A passenger plane crashed after striking a high tension wire at the edge of the airport. Six persons were killed outright; four

Fires and Explosions

- Jan. 10 Bartley, W.Va. Ninety-one workmen trapped underground killed in an explosion in a coal mine.
- Feb. 29 Arsa, Italy. Eighty-six were killed and 100 injured by an explosion in a coal mine.
- Mar. 16 St. Clairsville, O. Seventy-five persons were killed by an explosion in the Willow Grove coal mine.
- April 23 Natchez, Miss. One hundred and ninety-eight persons were burned to
- death in a fire which destroyed a Negro dance hall.

 May 7 Sandona, Colombia. One hundred and three persons, 67 of whom were children, were killed and 125 injured in a fire which destroyed the municipal palace.
- July 15 Sonman, Pa. Sixty-three persons were killed by an explosion in coal mine.
- Aug. 29 Bologna, Italy. Thirty-eight workmen were killed and 174 injured by an explosion in a munitions plant.
- Sept. 12 Kenvil, N.J. Forty-nine persons were killed, about 200 injured and a large number of houses in the surrounding country were wrecked by
- explosion in powder plant.

 Sept. 22 Sogamoso, Colombia. Twenty children were killed and four seriously injured in a panic caused by an alarm of fire in a motion picture theatre.
- Nov. 29 Cadiz, Ohio. An explosion in a coal mine trapped 30 miners who died
- before they could be rescued.

 Dec. 14 Rumania. Fifty-one men®were killed and 250 more trapped by an explosion in a coal mine 150 mi. northeast of Bucharest.

Marine

- Jan. 21 Near Toulon, France. Explosion in engine room of the Italian passenger ship "Orazio" in the Mediterranean set fire to the vessel, resulting in the death of 50 passengers and 60 of the crew.
- Feb. 18 Corunna, Spain. Twenty-two seamen were drowned when the Spanish steamer "Banderas" sank off shore.
- Feb. 25 Vigo, Spain. Thirty persons were drowned by the sinking of a small boat in Marin inlet.
- Mar. 4 Ningpo, China. Two hundred and fifty persons were drowned when the ship "King Shing" capsized in the Yung river.
- 2 Near Straits of Magellan. Chilean passenger steamer "Moraleda" struck a rock and was wrecked with a loss of 76.
- Oct. 13 Black sea. A small sailing vessel capsized near Gorele; 33 were drowned.
- Oct. 25 Sweden. At least 44 persons were drowned when a barge, carrying 80
- soldiers engaged in manoeuvres, capsized on Lake Armasjaervi.

 Nov. 10 St. John's, Newfoundland. Twenty-eight persons were drowned when a ferryboat struck a small motorboat in Conception bay and sank.
- Nov. 20 Melbourne, Australia. Twenty-four naval reservists were drowned when a merchant ship collided with and sank the minesweeper in which
- they were sailing across Port Phillip bay.

 Nov. 25 Haifa, Palestine. An explosion wrecked the steamer "Patria" on which 1,771 Jewish refugees were awaiting transfer to a British colony, killing 22 and seriously injuring 25.
- Istanbul, Turkey. More than 200 Jewish refugees from Bulgaria were drowned in the Sea of Marmora when their ship was wrecked.

Motor Traffic

- Jan. 29 Mexico. Thirty-two passengers killed and 23 injured when the gasoline tank exploded on a bus running from San Bartolo to Otolotepec.
- Mar. 14 McAllen, Tex. Twenty-seven were killed and 15 injured when a passenger train collided with a truck loaded with fruit pickers.

Natural Disasters

- 2 Kemal Pasha, Turkey. Five thousand drowned and 1,000 rendered homeless by a flood which swept over the region.
- Jan. 18 Balcittoy, Turkey. Fifty persons killed, 160 injured and 200 houses wrecked by earthquake.

 Feb. 21 Turkey. One hundred and twenty-five were killed and hundreds in-
- jured by an earthquake which wrecked Soysalli and three other villages in Kayseri province.
- Earthquake which struck Callao, Lima, Chorrillos and other cities killed approximately 350, injured 1,500 and caused widespread damage
- July 12 Seoul, Korea. Fifty-two persons were killed, 100 injured and thousands made homeless by typhoon.
- July 25 Chile. Storms in the northern provinces caused approximately 100 deaths.
- July 30 Anatolia, Turkey. More than 1,000 persons were killed by an earthquake.
- Oct. 18 Barcelona and Gerona, Spain. One hundred and eighty-two persons were drowned by floods in these provinces.
- Oct. 20 France. Floods in the southwest caused the death of 100 persons.
- Nov. 10 Rumania. Four hundred persons were killed and 800 injured by an earthquake which centred in Focsani.
- Nov. 11 U.S.A. A blizzard descending from Canada, accompanied by tornadolike winds and low temperatures, swept over the middle west and Rocky mountain states and as far south as Louisiana, killing more than 100.
- Nov. 18 Jamaica. One hundred and thirty persons were drowned in a cloudburst in two provinces.
- 7 Philippines. Eighty-one persons were killed in a typhoon which swept southeast of Manila.
- Dec. 26 Bejucal, Cuba. Forty persons were killed and 150 injured by a tornado accompanied by heavy rains.

Jan. 29 Osaka, Japan. Two hundred burned to death and 100 injured in a

- April 19 Little Falls, N.Y. While rounding a curve at high speed, the "Lake Shore Limited" of the New York Central railroad ran off the track, killing 31 persons and injuring 60 seriously.

 July 31 Cuyahoga Falls, O. Forty-three persons were killed when a suburban
- passenger car collided head-on with a freight train on the Pennsylvania railroad.
- Aug. 5 Near Calcutta, India. Thirty persons were killed and 70 injured when the Dacca-Calcutta mail train was wrecked.

 Nov. 4 Taunton, England. Twenty-seven persons were killed and 59 injured
- when a London-Penzance express train was derailed.
- Nov. 29 Soochow, China. Seventy-four persons were killed and 102 injured when a Japanese-operated Shanghai-Nanking train was derailed by a blast of dynamite.
- Dec. 3 Velilla de Ebro, Spain. Forty-one persons were killed and 80 injured
- when two express trains collided.

 Dec. 15 Iguala Caztal, Mexico. Twenty-five persons were killed and 46 injured when a railroad train ran off the tracks near the city.

Disasters of 1941

Aviation

- Tan. 4 Near San Diego, Calif. Entire crew of 11 in navy transport plane killed in crash on Mother Grundy peak.
- 6 Near Armstrong, Ont. Nine passengers and crew of three killed when Canadian passenger plane crashed a mile from Armstrong airport. April 8 Machipongo inlet, near Virginia coast. U.S. navy patrol bomber
- crashed and sank; ten aboard killed.
- Aug. 14 England. Twenty-two were killed, among them 11 American ferry
- pilots when a ferry plane crashed at an unnamed airport.

 Sept. 1 United Kingdom. Ten were killed when a transatlantic ferry transport plane crashed on the west coast.
- Oct. 13 Batavia, Netherlands Indies. Lt. Gen. Berenschot, commander of Netherlands Indies army, and 11 others killed in a plane crash.
 Oct. 30 St. Thomas, Ont., Can. New York-Chicago air liner crashed in flames,
- killing all 20 occupants.
- Oct. 30 Near Fargo, N. D. Fourteen died when air liner crashed in a fog near
- Fargo airport; pilot was only survivor.

 Nov. 3 Atlantic ocean. All 12 occupants of a U.S. navy bomber killed when plane crashed in Atlantic while on patrol duty.

Fires and Explosions

- June 5-6 Smederevo, Yugoslavia. At least 1,500 persons were killed and 2,000 seriously injured when an ammunition dump exploded in the Smederevo
- fort, near Belgrade, a Berne dispatch said.

 Aug. 18 Brooklyn, N.Y. A fire that started on a Brooklyn pier and wrecked the freighter "Panuco" took a toll of 31 dead.
- Oct. 31 Huddersfield, Yorkshire, England. Forty-one died in fire at clothing
- Oct. 31 Nordegg, Alberta, Can. Twenty-seven miners were killed by a blast in a colliery.

- Jan. 21 Off Boston, Mass. Fishing boat sank in shallow water after collision near Boston harbour; 19 were drowned, most of them after clinging three hours to protruding mast.
- Mar. 25 About 80 mi. south of Cape Lookout, N.C. Explosion followed by fire on 9,000-ton oil tanker "Cities Service Denver" cost lives of 20 seamen.
- Mar. 26 Off Halifax, Nova Scotia. Canadian navy patrol vessel destroyed by fire at sea; 19 seamen were drowned or died of exposure.
- May 18 Near Little River, S.C. Explosion aboard the excursion boat "Nightingale" killed seven passengers and injured 14.

 June 20 Near Portsmouth, N.H. U.S. navy submarine "O-9" failed to come up from a 402-ft. test dive; crew of 33 was lost.
- June 29 Near Bailey island, Me. Thirty-six died when a cabin cruiser exploded. Sept. 17 Near Stockholm, Sweden. Three Swedish destroyers were blown up in
- a mysterious blast in Haorsfjaerdens naval yard; 31 sailors were killed and 12 were injured.

- Oct. 26 Near Clanton, Ala. Fifteen were burned to death when a bus crashed
- into concrete bridge and burst into flames.

 Dec. 25 St. Louis, Mo. Ten died and 22 were injured when bus collided with automobile and caught fire.

Natural Disasters

- Feb. 16-18 Spain and Portugal. Violent hurricane lashed ports along Bay of Biscay and Atlantic coast, killing 145 persons and starting a fire in Santander which left 30,000 homeless.
- Mar. 16 North Dakota and Minnesota. Blizzard, sweeping along at 85-m.p.h. pace, killed approximately 60 persons.

 April 15 Colima, Mexico. Earthquake followed by tidal wave and eruption of
- Colima volcano brought death to at least 174 persons, injured 175 and caused heavy damage.

 May 25 Ganges delta, India. Five thousand persons were reported drowned in
- a storm that struck a number of villages in the Barisal district.

 July 22 Ashikaga, Shizuoka prefecture, Japan. A typhoon following a week of
- heavy rains caused the death of 35 persons and left 26,000 homeless in the region.
- Dec. 13 Huaras, Peru. Landslide wiped out entire residential section; more than 500 died.

Railroad

Nov. 2 Paris, France. Twenty killed and 48 injured when a passenger train

and freight train crashed at entrance of Austerlitz station.

Near Dunkirk, O. Twelve were killed and 40 others injured when a Chicago-New York express jumped the rails and plowed into a control

Disasters of 1942

Jan. 16 Las Vegas, Nev. Fifteen army ferry pilots, Carole Lombard, movie actress, her mother, two other passengers and crew of three were killed in crash of transport plane on Table Rock mountain.
 Mar. 14 China. Maj. Gen. Lancelott Dennys, head of British air mission to

China, and 12 others were killed in crash of transport plane flying from

Kunming to Chungking.

May 1 Near Salt Lake City, Utah. Seventeen persons died when passenger plane crashed into Ensign peak.

Near Welch, W.Va. Twenty-one officers and enlisted men were killed

in crash of army transport plane. Aug. 15 Near Peru, Mass. Sixteen of 18 men were burned to death when big

army transport plane crashed on Peru mountain in Berkshire hills.

Sept. 11 Buffalo, N.Y. Twelve workers were killed and 35 were injured when a flaming plane, whose pilot had bailed out, dived nose first through Curtiss-Wright aeroplane factory in East Buffalo.

Sept. 27 Near Algiers, Algeria. French civilian plane crashed; all 25 occupants were burned to death

Oct. 1 Near Coamo, P.R. Twenty-two were killed in crash of army transport plane on mountain.

Oct. 26 Montreal, Canada. Ferry command plane crashed in flames on Montreal island, killing all 16 occupants.

Dec. 15 Near Fairfield, Utah. Seventeen of 19 persons aboard air liner were

killed when plane crashed in desert.

Fires and Explosions

Jan. 1 Burslem, Staffordshire, England. Fifty-eight miners died in colliery blast.

Jan. 28 Mount Harris, Colo. Thirty-four miners died in explosion in coal mine. Feb. 10 New York city. Transport ship "Lafayette" (former liner "Normandie"), toppled over at Hudson river pier after 12-hour fire in superstructure. One was killed and 128 injured in fire caused by spark from worker's acetylene torch.

Mar. 4 Burlington, Ia. Fifteen munitions workers were killed, 51 others were injured and 5 were missing in blast in ordnance works.

Mar. 26 Easton, Pa. Premature explosion of 21 tons of gelatinite in quarry killed 31 persons.

April 29 Tessenderloo, Belgium. Explosion in chemical plant killed 250 workers and injured more than 1,000 others.

May 12 Osage, W.Va. Forty-five miners were killed by blast in coal mine.

June 5 Near Joliet, Ill. Explosion in Elwood ordnance plant killed 21 and injured 41; 33 were listed as missing.

Nov. 28 Boston, Mass. Fire that started in night club when match was dropped on gauzelike draperies took lives of at least 493 persons and injured at least 172, many critically; high death toll was laid to panic of patrons

who rushed into lounge and piled up before narrow revolving door. Dec. 12 St. Johns, N.F. At least 100 persons were burned to death when fire swept through hostel where servicemen were attending barn dance.

Jan. 24 Off Panama. U.S. submarine "S-26" was sunk in collision with naval

vessel; 32 of crew of 35 were lost.

Feb. 24 Near Lawrence, N.F. U.S. navy department revealed that 1,193-ton destroyer "Truxtun" and 6,085-ton naval transport "Pollux" were wrecked in gale at mouth of St. Lawrence river; 189 lives were lost.

Sept. 21 Midland, Ont., Canada. Launch carrying party of picnickers sank

in Georgian bay; 25 drowned.

Oct. 2 Off Donegal county, Eire. Troop transport "Queen Mary" rammed British cruiser "Curacao," which sank with loss of 338 naval personnel; admiralty delayed announcement until after V-E day.

Dec. 2 Cleveland, O. Tug and big oil-tanker barge both sank in Lake Erie; entire crews of both ships, totalling 34, were lost.

Dec. 2 Newport, R.I. Fifteen out of 17 sailors were drowned when small 30-ft. boat capsized in gale.

Motor Traffic

Aug. 5 Crystal Springs, Miss. Thirteen persons were killed and 53 injured when a crowded bus and train collided at mid-town crossing.

Oct. 28 Detroit, Mich. Sixteen were killed and more than 20 others were injured when a speeding passenger train ripped into motorbus jammed with school children and factory workers at grade crossing.

Natural Disasters

6 Rio de Janeiro, Brazil. Twenty-eight were killed and many others in-Jan. jured in cloudburst over Rio de Janeiro.

Midwest and southern U.S. One hundred and thirty-six persons

15-16 were believed killed in tornado that swept through Mississippi, Alabama, Tennessee, Kentucky, Indiana and Illinois.

April 27 Pryor, Okla. Tornado killed nearly 100 persons, injured between 150 and 300, and caused damage estimated at \$1,000,000.

May 13 Western Ecuador. About 200 persons were killed and more than \$2,500,000 in property damaged when severe earthquake rocked provinces in Guayas, Manabi, Esmeraldas, Imbabura and Bolivar.

May 23 Eastern Pennsylvania. Floodwaters caused by torrential rains took toll

of at least 30 lives and caused property damage estimated in millions of

June 12 Oklahoma City, Okla. Two tornadoes caused death of 29 persons and injuries to 25 others.

Oct. 16 Bombay, India. Cyclone rising from Bay of Bengal swept inland, devastating vast area in two Bengal districts, and killing an estimated 40,000.

Oct. 29 Berryville, Ark. At least 28 were killed and more than 200 others were injured in tornado. Dec. 19 Anatolia, Turkey. Four hundred and seventy-four persons were killed

and 605 injured in severe earthquake.

Dec. 22 Aliquippa, Pa. Avalanche buried motorbus loaded with defense work-

ers, killing 22.

Railroad

Sept. 24 Dickerson, Md. Passenger train telescoped into stalled night express and tossed rear Pullman into path of freight; toll of known dead was

Dec. 27 Almonte, Ont., Canada. Thirty-five were killed and 118 others injured when three rear cars of local train were telescoped by troop train.

Disasters of 1943

Jan. 15 Near Paramaribo, Dutch Guiana. Maj. Eric Knight, novelist, was among 35 persons killed when transport plane crashed in jungle.

Jan. 22 Pacific ocean. U.S. navy reported that transport seaplane carrying crew of nine and ten naval officers was more than 24 hrs. overdue on flight

from Pearl Harbor to San Francisco. Feb. 9 Newfoundland. Ferry-command plane crashed, killing 13 passengers and crew of six.

Feb. 22 Lisbon, Portugal. Four persons were killed and about 20 others were

missing after a clipper flying boat crashed in landing on Tagus river.

4 Gibraltar. Premier Wladislaw Sikorski of Polish government-in-exile, his daughter, Mme. Sophia Lesniowska, and 14 others were killed in crash of plane soon after taking off from Gibraltar.

July 28 Near Bowling Green, Ky. Twenty persons were burned to death when

air liner crashed and exploded.

Aug. 1 St. Louis, Mo. Ten persons, including Mayor William D. Becker of St. Louis, were killed in crash of army troop glider.

Aug. 26 Rio de Janeiro. Crash of air liner into Rio de Janeiro bay brought death

to 18 of 21 persons aboard plane.

Sept. 20 Maxton, N.C. Crash of army transport plane at Laurinburg-Maxton airfield resulted in death of 25 persons aboard craft.

Fires and Explosions

Jan. 31 Near Seattle, Wash. Twenty-eight patients were burned to death in

fire that swept through sanatorium for aged invalids.

Mar. 28 Naples, Italy. At least 79 persons were killed and 1,179 were injured when an ammunition dump in port area blew up. (Berne dispatches said at least 400 were killed and 2,000 injured.)

Sept. 7 Houston, Tex. Forty-five men died in fire that swept old hotel in Hous-

ton's mid-town section.

Sept. 17 Norfolk, Va. Twenty-four persons were killed and 250 others injured when "ammunition in transit" at Norfolk naval air station blew up.

Dec. 25 Wildwood, N.J. Fire that started on ocean pier destroyed three theatres, two hotels, an amusement pier, 25 stores and nine homes.

June 6 Near Norfolk, Va. Eighty-four men were killed in explosion that followed collision between ammunition ship and oil tanker off east coast of

Aug. 31 Near east coast Canadian port. Death of 30 seamen in collision of two Allied merchantmen off eastern seaboard was disclosed.

Oct. 20 Off Florida coast. Eighty-eight men died when two blacked-out tankers, one of which carried thousands of tons of aviation gasoline, collided and exploded off the Florida coast.

Natural Disaster

Nov. 26 Ankara, Turkey. About 1,800 persons were killed and 2,000 others were injured in series of quakes that rocked northern Turkey, Ankara dispatches reported.

Railroad

June 4 Bombay. Fifty-two persons were killed and 100 were injured when Bombay-Calcutta mail train crashed.

Aug. 30 Wayland, N.Y. At least 27 persons were killed when freight engine moving from siding crashed into locomotive of crack express train.

Sept. 6 Philadelphia. Seventy-nine persons were killed and more than 100 others were injured when over-heated journal on end of car axis broke, derailing "Congressional Limited" as it was rounding curve within city.

Dec. 16 Near Rennert, N.C. Seventy-two persons were killed and scores injured

when three coaches of a southbound train were derailed and fell on adjoining tracks directly in path of speeding northbound express.

Miscellaneous

Mar. 4 London. One hundred and seventy-eight persons were killed and 60 others were injured when woman carrying baby tripped on stairs, causing panic at entrance of air raid shelter during German air attack.

Disasters of 1944

Feb. 10 Memphis, Tenn. Crash of commercial transport plane into Mississippi river, 19 mi. below Memphis, brought death to 24 persons aboard. April 28 Near Flagstaff, Ariz. Naval transport plane crashed into mesa 30 mi.

southeast of Flagstaff, bringing death to 19 persons aboard and injuries to four others

July 27 Mull of Galloway, Scotland. U.S. hospital transport plane crashed,



Meloo Louise

Above: The tidal wave that struck Hilo, Hawaii, on April 1, 1946, left entire streets in grotesque shambles as shown in this scene photographed the following day



Right: The worst hotel fire in U.S. history took 120 lives and injured more than 100 at the Winecoff hotel in Atlanta, Ga., Dec. 7, 1946. This picture was taken at the height of the blaze

Below: Shattered cars which were derailed when the Burlington crack "Exposition Flyer" crashed into the rear of a train stalled at Naperville, Ill., on April 25, 1946. Forty-five persons were killed and more than 100 injured





- killing 22 persons aboard, including 18 wounded soldiers who had been evacuated from base hospitals in Normandy.
- Aug. 8 Havana, Cuba. Seventeen passengers were killed when clipper plane crashed in Nipe bay during take-off for Miami; nine passengers and five crewmen were saved.
- Aug. 23 Freckleton, England. Seventy-one persons, including 51 children, were killed when U.S. bomber crashed into school and burst into flames.
- Sept. 18 Mt. McKinley, Alaska. All 16 passengers and three of crew were believed to have been killed when ATC plane crashed into one of lesser peaks of Mt. McKinley.

 Oct. 18 Bebington, England. U.S. bomber caught fire and exploded in mid-air
- killing all 24 U.S. airmen aboard.

Fires and Explosions

- April 14 Bombay, India. Ship fire that spread to ammunition dump, causing heavy explosions, took toll of at least 128 dead.
- May 21 Pearl Harbor. Explosion that occurred among small landing craft killed 27 men, wounded 380; 100 persons were listed as missing.

 July 5 Bellaire, O. Sixty-six miners were entombed in deep coal shaft that was
- set afire by short circuit.
- July 6 Hartford, Conn. At least 163 persons perished and 193 others were badly burned when circus "big top" that had caught fire collapsed on the audience during regularly scheduled performance.

 July 17 Port Chicago, Calif. At least 321 persons were killed and hundreds more
- injured in explosion of undetermined origin that blew up two munition ships, wrecked navy loading pier and razed large areas; material dam-
- age caused by blast was estimated at minimum of \$5,000,000.

 Oct. 20 Cleveland, O. Fire that started when huge gas tank exploded killed 121 persons, destroyed about 300 dwellings and caused property damage put at \$10,000,000.

Marine

April 7 London. U.S. naval headquarters disclosed that U.S. Liberty ship cracked into three pieces when it hit reef less than 60 yards from shore; 62 crew members perished.

Motor Traffic

Mar. 20 Passaic, N.J. Sixteen persons were killed when passenger bus hurtled over bridge and plunged into Passaic river.

Natural Disasters

- Jan. 15 San Juan, Argentina. Severe earthquake rocked Andes mountain province in west central Argentina, causing heavy damage in city of San Juan and neighbouring villages, killing estimated 900 people and leaving 70,000 homeless.
- April 16 Southeast Georgia and western South Carolina. At least 38 persons were killed and 500 others injured by tornado that swept through 100-mi. belt.
- June 23 Pittsburgh. Tornado sweeping through parts of Pennsylvania, West Virginia and Maryland area killed at least 145 persons, injured hundreds of others and impaired communication facilities
- Sept. 14 New York city. Hurricane ripped along 1,500 mi. of Atlantic coast between Carolinas and Canada, killing at least 27 people, injuring many more and causing property damage estimated at some \$50,000,000.

 Oct. 20 U.S. South Atlantic coast and Cuba. Hurricane swept through Cuba
- and up to Carolinas coast, bringing death to at least 35 persons and causing heavy property damage.

- 6 Kingman, Ariz. Twenty-five air cadets, an army private and a bus driver were killed in collision of bus and freight train near entrance to Jan. Kingman airfield.
- Jan. 16 Leon province, Spain. Between 500 and 800 persons were reported killed in train wreck inside tunnel during week of Jan. 9-15.

 July 6 Jellico, Tenn. Thirty-three persons met their death and more than 100
- others were injured when locomotive and two sleepers of troop train plunged into 50-ft. Clear river gorge.

 Sept. 14 Near Terre Haute, Ind. Head-on collision between two passenger trains resulted in death of 26 persons, of whom a score were U.S. air
- force veterans, and caused injuries to 65 others.

 Dec. 31 Near Ogden, Utah. Second section of limited train telescoped into rear cars of first section, 18 mi. west of Ogden, bringing death to 48 persons and injuries to scores of others.

Disasters of 1945

Aviation

- 8 Port of Spain, Trinidad. At least 23 persons were killed when passenger flying boat was wrecked and sunk as it alighted on water.
- Jan. 10 Los Angeles, Calif. Fog caused crash of passenger plane in canyon, killing all 24 persons aboard.
- Feb. 13 San Francisco bay, Calif. Twenty-four persons perished when navy transport plane plunged into San Francisco bay.

 Feb. 23 Near Cedar Springs, Va. Seventeen persons were killed and five were
- April 14 Morgantown, W.Va. All 20 persons aboard air liner were killed when plane crashed into Chestnut ridge, 12 mi. east of Morgantown.

 July 28 New York city. Twin-engined army bomber lost in fog rammed into Empire Scota building between 78th and 78th Agong cetting appears.
- Empire State building between 78th and 79th floors, setting upper stories of world's tallest building afre; 13 persons, including three occu-pants of plane, were killed and 26 others were seriously injured.

 Sept. 7 Florence, S.C. Commercial air liner plunged into deep swamp, killing
- all 22 persons aboard.

- Sept. 15 Kansas City, Kan. Twenty veterans as well as crew of three were killed when military transport plane crashed on north bank of Missouri river after take-off from Fairfax airport.
- Corpus Christi bay, Tex. Collision of two navy planes resulted in death Nov. 8
- of 22 officers and men.

 8 Billings, Mont. Transport plane crashed in attempt to land in heavy snowstorm, killing 19 of 23 persons aboard.

Fires and Explosions

- Jan. 31 Auburn, Me. Sixteen children and one adult perished in fire that swiftly swept through frame nursery for children of war workers.
- June 19 Sewell, Chile. Fire that broke out in Sewell copper mine, 125 mi. from Santiago, caused death of 139 persons.

 July 18 Viareggio, Italy. Explosion of stored enemy mines wrecked American Red Cross club, killing 24 U.S. soldiers and 12 Italian civilians.
- Dec. 25 Hartford, Conn. Short circuit which started Christmas tree fire set hospital aflame and brought death to 15 patients, and three others.

Marine

- Feb. 5 Upper New York bay, N.Y. At least 19 persons were killed, an unknown number missing and 74 injured when tanker loaded with 120,000
- drums of high-octane gas exploded after crash with second tanker.

 April 9 Bari, Italy. U.S. Liberty ship loaded with aerial bombs blew up in harbour causing at least 360 deaths and injuries to 1,730 others; origin of blast was not known.
- April 12 Southeast coast of Massachusetts. At least 15 men were killed and seven were missing in collision between U.S. freighter and Allied tanker.

 April 23 Cape Elizabeth, Me. Forty-nine lives were lost when U.S. navy patrol
- ship exploded; cause of blast was not known.

Motor Traffic

- June 25 Near Joplin, Mo. Loaded passenger bus struck a cow, plunged down embankment and overturned, killing 12 persons and injuring 28 others ahoard
- Nov. 26 Lake Chelan, Wash. Fourteen school children and bus driver were drowned when school bus dived over 50-ft. embankment into Lake Chelan during blinding snowstorm.

Natural Disasters

- Feb 8-9 New England. At least 20 persons were killed and considerable property damage was wrought by blizzard.
- Feb. 12 Mississippi-Alabama. At least 43 persons were killed and hundreds injured by tornado sweeping across parts of Mississippi and Alabama;
- property damage was heavy.

 April 12 Oklahoma-Arkansas-Missouri area. Tornado slashing through tri-state region caused more than 100 deaths and substantial property damage.
- Oct. 9 Okinawa. Forty-three persons were killed, 30 were listed as missing and
- 49 were injured in typhoon that swept island, sinking eight vessels and grounding about 200 others, mostly small craft.

 Nov. 30 Northeastern United States. Raging storm accompanied by heavy gales and snows caused death of at least 34 people and wreaked considerable property damage as it swept over New England, New York state and New Jersey.

- Feb. 1 Cazadero, Mex. About 100 persons perished when freight train crashed into rear of passenger train packed with pilgrims bound for religious festival. Fire that quickly consumed nine wooden coaches caused most
- June 15 Milton, Pa. At least 20 persons were killed and 32 others injured when express train jumped track and plowed into freight train going in opposite direction
- Aug. 9 Michigan, N.D. Thirty-four persons were killed and at least 40 others injured when second section of passenger train crashed into first section.

Disasters of 1946

- Jan. 31 Near Laramie, Wyo. All 21 persons aboard commercial air liner were
- believed killed when plane crashed into Elk mountain.

 March 3 Near San Diego, Calif. All 27 persons aboard New York-Los Angeles air liner were killed when aircraft crashed into mountain peak 60 mi. E. of San Diego.
- Mar. 19 Near Truckee, Calif. Army transport plane exploded and crashed in snowstorm in Sierra Nevada area, bringing death to all 26 persons
- May 10 Near Munson, Fla. Two four-engined navy planes crashed in flames in wooded area, killing 28 fliers.

 May 16 Near Richmond, Va. Twenty-five passengers and crew of two were
- killed when commercial air liner, groping through fog, missed airport and crashed in flames in pine forest six miles from Richmond.
- May 20 New York city, N.Y. Army plane lost in fog crashed into 58th floor of Manhattan company building in Wall street, killing all five occupants in craft, including WAC officer.
- Amalfi, Italy. At least 8 persons were killed and 22 others were missing in crash of U.S. army transport south of island of Capri. June 1
- June 9 Panama, C.Z. All 23 persons aboard army transport were killed when plane crashed into mountain on Taboga Island off entrance to Panama canal.
- June 12 Great Smoky Mts., Tenn. All 12 persons aboard army Superfortress were killed when aircraft crashed into mountain peak near Tennessee-North Carolina state line.
- July 10 Mount Tom, Mass. Twenty-five persons were killed in crash of converted B-17 Flying Fortress.
 July 17 Cuenca, Ecuador. Crash of air liner resulted in death of 32 persons.

- Sept. 3 Zealand Is., Denmark. Twenty-two were killed when French air liner crashed.
- Sept. 4 Le Bourget, France. Crash of French air liner in factory courtward resulted in death of 21.
- Sept. 5 Near Elko, Nev. Twenty-one were killed when U.S. air liner crashed
- into hill; only survivor was two-year-old child.

 Near Bathurst, Gambia, W. Africa. All 23 persons aboard British air liner bound for South America were killed when plane crashed a few Sept. 7 minutes after take-off from Bathurst airport.
- Sept. 15 Estevan, Saskatchewan, Canada. Transport plane exploded and burned after crash at airfield, killing 21 Royal Canadian air force personnel aboard.
- Sept. 18 Near Gander, Newfoundland. Twenty-six persons aboard Belgian air liner were killed when plane crashed. Eighteen survivors of crash were brought back to safety by army and coast guard rescue teams.
- Sept. 25 Near Hong Kong. Nineteen persons aboard R.A.F. aircraft were killed when plane crashed on hillside shortly after take off.

 Sept. 27 Near Rio Doce, Brazil. Commercial air liner struck by lightning caught
- fire and crashed in jungle, killing all 25 persons aboard.
- Near Stephenville, Newfoundland. All 39 men, women and children aboard U.S. transatlantic air liner were killed when craft exploded after Oct. 3 crashing into hill; cause of accident was ascribed to "mechanical failure."
- Penang, British Malaya. Twenty-one persons aboard Ceylon-to-Singaore transport were killed in crash.
- Nov. 1 Near Limoges, France. Twenty-four persons killed when chartered plane crashed on Paris-Casablanca run.
- Nov. 13 Near Perote, Mex. At least 16 persons were killed in crash of passenger air liner on mountain.
- Nov. 14 Near Amsterdam, Holland. Twenty-six persons killed in air liner crash.
- Nov. 16 Near Iwo Island. Twenty-three persons killed when U.S. army trans-
- port crashed into sea 15 mi. from Iwo.

 Nov. 26 Near San Jose, Costa Rica. At least 23 killed when commercial air liner hit mountainside.
- Dec. 23 Near Rio de Janeiro. Twenty persons were killed in crash of commer-
- cial air liner. Dec. 24 Laguna Mts., Calif. Commercial air liner crashed on peak, killing 12
- persons.

 Dec. 25 Near Shanghai. At least 71 persons were killed when three Chinese air liners crashed separately in heavy fog.
- Dec. 28 Near Shannon, Ireland. Twelve persons aboard commercial air liner were killed when craft crashed and exploded on island in River Fergus near Shannon airport. Eleven survivors of accident were injured.

Fires and Explosions

- Chicago, Ill. At least 61 persons perished in flames or were suffocated June 5 by smoke in fire that swept La Salle hotel.
- Dubuque, Ia. Fire that started in basement of Canfield hotel brought Tune 9 death to estimated 15 people; 22 others were reported as missing.
- June 21 Dallas, Tex. At least 8 persons were killed and 41 others injured when exploding ammonia fumes from air-conditioning unit in basement swept through 700-room Baker hotel. There was no fire.
- June 25 Staten Island, N.Y. Estimated \$2,000,000 damage was caused by fire that destroyed ferry terminal; at least two persons were killed and several others injured in flames.
- Atlanta, Ga. At least 120 persons were killed in fire that swept Winecoff Dec. 7 hotel; an estimated 100 more were injured.
- Saskatoon, Saskatchewan. Fire that started in hotel's restaurant raged through Barry hotel in matter of seconds, bringing death to at least 11 ersons: 18 others were injured.
- Dec. 12 New York city. Collapse of ice plant wall sheared off half of neighbouring tenement, entombing and killing at least 37 residents of build-

Marine

- Feb. 4 Near Seward, Alaska. Passenger liner "Yukon" with 495 persons aboard, split into two sections after running aground in blizzard; coast guard reports indicated two dead and 31 missing.
- July 31 Off Rio de Janeiro. About 27 persons died in fire that started in boiler room of Brazilian transport "Duque de Caxias."
- Aug. 2 Tanganyika, Africa. 295 persons were drowned in sinking of steamer 'Vitya" in Lake Nyassa.
- Sept. 13 Off Cape Hatteras. Captain, his wife and 10 crew members drowned when Norwegian tanker broke in two during hurricane; 24 others of crew were rescued.
- Off Toulon, France. Hope abandoned for 18 men trapped in submarine believed sunk by floating mine off Toulon.

Motor Traffic

Dec. 18 Near Newberry, S C. Ten school children and bus driver were killed when school bus crashed into train.

Natural

- Feb. 13 Constantine, Algeria. At least 276 persons were killed in earthquakes that hit Setif and Batna regions in Constantine department.

 April 1 Alaska-Hawaii area of Pacific ocean. Series of seismic waves started off
- Alaska and Aleutian Islands and spread to Hawaiian Islands, causing about 150 deaths and leaving 5,000 persons homeless in Hawaii alone; damage was estimated in millions of dollars.
- May 28 Susquehanna valley, N.Y.-Pa.-Ohio. Susquehanna river flood, aggravated by heavy rains, caused widespread damage; 12 were reported dead and several persons were reported missing.
- May 31 Mus and Erzurum provinces, Turkey. At least 1,330 persons were killed in earthquake in eastern Turkey that levelled many villages.
- June 17 Detroit-Windsor. At least 14 persons were killed and many others in-jured by tornado that swept through U.S.-Canadian border area striking Detroit and Windsor regions.



Guests of the La Salle hotel in Chicago, III., climbing down fire escapes on the night of June 5, 1946, when fire took the lives of at least 61 persons

- West Indies. Violent earthquake in northern provinces of Dominican Republic brought death to at least 73 persons; heaviest shock accom-4~10 panied by tidal wave occurred Aug. 4; minor tremors were felt in Puerto Rico, Haiti and Cuba.
- Oct. 9 Off Portugal. Hurricane which swept over Madeira and Azores resulted in death of 27 persons.
- India. Between 300 and 400 persons were killed in earthquakes that Nov. 3 struck Muzaffarpur in Bihar province.

- Nov. 12 Negros Island, Philippines. Two hundred and sixty killed in typhoon, Manila dispatches disclosed.
- Nov. 13 Northern Peru. More than 500 persons were believed killed in series of
- earthquakes over 72 hr. in Andes mountain area; quake started Nov. 10.

 Nov. 15 Colorado. At least 18 persons died in two-week-period snowstorms (Nov. 2–15) that paralyzed communications over vast area in Colorado.
- Dec. 21 Southern Japan. Great earthquake, which started six tidal waves, spread ruin over large area of southern Japan; official figures indicated 1,088 dead, 165 missing, 142 injured and 94,669 persons left homeless.

Railroad

- April 25 Naperville, Ill. At least 47 persons were killed and 100 others injured when second section of express train, travelling at more than 75 m.p.h. crashed into rear of first section which had halted.
- Sept. 26 Near Victorville, Calif. Six persons were killed and 50 others injured in crash of crack passenger train.
- Nov. 12 Near Revigny sur Ornain, France. At least 35 people killed and 80 others injured in train crash.
- Dec. 13 Near Mansfield, O. At least 18 persons, including 14 soldiers were killed in three-way crash of passenger and two freight trains.

Miscellaneous

- Jan. 12 Diamond Harbor, India. Collapse of two temporary jetties on Hooghly river resulted in death of estimated 160 pilgrims who were bound for site of ceremonial bath.
- Mar. 9 Bolton, Lancashire, Eng. At least 33 persons were killed and 500 more were injured when guard rails in football stadium collapsed.

Disciples of Christ

In common with other religious bodies, Disciples of Christ suffered curtailment of some activities and the redirection of others during the years of World War II. Building operations were at a standstill, but many churches accumulated funds for future building. Normal expansion in home missions had to give place to special services to armed service personnel, to new industrial communities, and to displaced Americans of Japanese ancestry. Many of the younger ministers went into the chaplaincy with the armed forces (422 in service at the end of hostilities). The adoption of a resolution by the 1936 convention disapproving the military chaplaincy with "rank, pay and allowances" from the war department, and favouring a civilian chaplaincy supported by the churches to serve the armed forces, did not prevent hearty co-operation in the existing system, since there was no other. Carroll C. Roberts was chief of the Disciples' office for the certification of candidates for the chaplaincy. The supply of candidates for the ministry was temporarily reduced. A special fund, the "emergency million," was raised for wartime services during 1941-43. Restrictions on travel prevented the holding of many scheduled conventions and assemblies, and especially interfered with summer conferences and camps for young people. The annual international convention (U.S. and Canada) was omitted in 1940, 1943 and 1945. The 1946 convention was held at Columbus, Ohio, with M. E. Sadler as president. The world convention was postponed and moved from Toronto, Canada (1940) to Buffalo, N.Y. (1947). Robert M. Hopkins served as president of the United Christian Missionary society during the entire decade. Harry McCormack succeeded him in 1946, when Dr. Hopkins was appointed to serve the World Council of Churches at the Geneva office and to cultivate acquaintance with Disciples in Europe.

Disciples participated in all interchurch and oecumenical movements—the Conference on Life and Work at Oxford and the Conference on Faith and Order at Edinburgh, both in 1937, the continuing American Theological committee, a subsidiary of the latter; the Conference on the World Mission of the Church at Madras, India, in 1938 and the formative processes of the World Council of Churches of Christ. At their 1946 convention they unanimously approved the formation of the National

Council of Churches of Christ in the U.S., a merger of the principal existing interdenominational agencies.

Inner tensions which had long existed among Disciples continued unabated. The movement which gave rise to the Disciples as a separate body (in 1830) began with an appeal for the unity of all Christians and a return to simple and noncredal Christianity by the "restoration" of the primitive faith and practice. There had always been differences of opinion as to what was primitive and how much of it should be restored. The immersion of adult believers became the only recognized baptism, and until about 1900 there was no suggestion that this might be a matter of opinion. Before 1900 there were many who thought instrumental music and missionary societies contrary to the New Testament pattern; these separated and after 1906 were listed by the census as "Churches of Christ." Among those who did not withdraw on those issues were many who regarded it as apostasy not to believe in the infallibility of the Bible, and who thought that the autonomy of the local church was invaded by the actual operations of the missionary and administrative organizations and that the appointment of authorized representatives of the Disciples in the federal council or other interdenominational bodies was a usurpation of power. The protesting element refused to support the work of the United Christian Missionary society, which it charged with excessive "liberalism," and avoided the international convention, to which this and other agencies continued to report. It supported a number of independent missions and, for about ten years prior to 1946, held an annual convention of its own, called the North American. Sessions of the international convention were generally harmonious and its actions substantially unanimous, because those who disapproved its policies did not attend. There was, nevertheless, some overlap in the attendance at the two conventions, both of which were, in effect, mass meetings of all Disciples who wished to attend. In 1945 there were 5,872 churches which contributed to agencies reporting to the international convention, and 2,157 which did not. An acutely controversial point was the practice of "open membership" (the reception of Christians of other denominations into membership without immersion), which was adopted by a considerable and rapidly increasing number of churches.

These inner tensions and divergences of opinion led to the appointment, in 1936, of a commission on re-study of the disciples, on which the various schools of thought were represented. The commission published a report in 1946 defining the issues and mapping the field for further study, with a view to ironing out differences or maintaining unity in spite of them.

Indications of Growth.-In 1936, world membership in the Disciples of Christ was 1,756,403 (U.S. and Canada, 1,612,172; foreign, 144,231). Churches in the U.S. and Canada numbered 8,198, foreign, 825; ministers, U.S. and Canada, 7,304; local church maintenance, \$9,410,460 (in 1931 it was more than \$13,000 000); missions, benevolences and education, \$2,950,228. U.S. churches had foreign missions in Africa (Belgian Congo), China, India, Jamaica. Japan, Mexico, Philippine Islands, Puerto Rico, Argentina and Paraguay, with 205 organized churches having 65,181 members in these lands, served by 173 missionaries and 1,711 nationals. In addition, the British churches maintained missions in South Africa and Siam, and the Australian churches had missions in the New Hebrides. Of countries which were not mission fields, Great Britain reported 15,838 members, Australia 32,396, New Zealand 4,725, Norway 544, Denmark 120, South Africa 411 and

Poland 25,000. A total of 41 countries were listed in which Disciples of Christ had churches. Many of these were countries in which religious movements had been discovered with close kinship with the Disciples in spirit, purpose and program, but which had entirely independent origins and histories and little or no direct connection with Disciples in the English-speaking countries, and had received no aid from them. Of this class, only the Polish "Disciples" entered into the statistics, and these only by an estimate unsupported by details.

Comparable statistics for 1945 (year ending June 30) were as follows: Membership, as in the paragraph above, showing gains of 5.1% for U.S. and Canada, 15.5% for foreign, and 6.3% for the world. Churches, U.S. and Canada, 8,004; foreign, 922. Ministers, U.S. and Canada, 7,854. Local church maintenance, \$20,913,535. Missions, benevolence and education (including war emergency funds and college endowments), \$9,120,208. Wartime conditions had such a disturbing effect on foreign missions in some fields that reports could not be made which were fairly comparable with those for 1936, although only in Japan and in the Philippine Islands were operations suspended entirely. The Yearbook of Disciples of Christ published in Dec. 1945 stated that there were members in "17 foreign countries," including mission fields. "Unified promotion," in which many of the missionary and educational agencies co-operated in a united appeal to the churches for support, completed its tenth year on June 30, 1946. Twenty-five educational institutions co-operating with the board of higher education reported an aggregate of \$18,246,357 in endowment funds, \$37,029,127 in total assets and 9,470 students, of whom 1,016 were students for the ministry. (W. E. GA.)

Displaced Persons

As the events of World War II made increasing demands on German manpower, the nazis engaged in a systematic and ruthless program of recruiting foreign labour to bolster home production for their war machine. Recruitment is hardly the word to apply to the hundreds of thousands of Jews and those considered politically undesirable who were deported to labour and die in nazi concentration camps. But millions were recruited from France, Belgium, the Netherlands, Denmark, Norway, Poland, Soviet Russia, Italy and the Balkan countries through open threats and subtle forms of economic coercion.

With the publication of E. M. Kulischer's book, Population Displacement in Europe, in 1943, the public was given its first opportunity to examine the details of this nazi program of enslavement, although the British foreign office and the U.S. department of state, various independent research workers in demography and the various governments in exile in London had collected valuable information on certain aspects of the program. Unfortunately the various experts did not agree, and estimates of the number of displaced persons in Germany and nazi-occupied Europe varied from a low of 8,000,000 to a high of 30,000,000.

The Anglo-U.S. military authorities in London soon realized the necessity for advance planning to meet the eventuality, with the defeat of Germany, of caring for and repatriating millions of Europeans. Before a plan could be drafted, however, it was necessary to obtain the most accurate knowledge possible of the magnitude of the problem, so that supplies of food, clothing and medicine could be requisitioned to care for these displaced persons from the time of their liberation until they could be

repatriated. These estimates were made during the winter and spring of 1944 through the joint efforts of the Anglo-U.S. intelligence agencies and the governments in exile located in London. The work was initiated and given direction by Supreme Headquarters Allied Expeditionary Force (S.H.A.E.F.). The estimates (as shown in summary form in Table I), gave the number of foreign workers, deportees and other categories of displaced persons by nationality for each country, subdivided by regions, provinces, departments and urban centres and provided the basis for the S.H.A.E.F. plan.

The master plan which was written during the spring of 1944 by Majors M. Macdonald (British) and L. W. Cramer (U.S.) was essentially a product of integrated Anglo-U.S. staff work in the Displaced Persons branch, G-5 division (military government) of S.H.A.E.F. After receiving the approval of the supreme commander, the plan was issued to the S.H.A.E.F. armies as Administrative Memorandum Number 39. In brief this memorandum: (1) defined displaced persons as civilians outside their country by reasons of the war and refugees as temporarily homeless or displaced nationals within their own country; (2) placed full responsibility on military commanders in the field for the care and repatriation of displaced persons, including the requisitioning of supplies, billets and transportation; (3) specified the functions and the establishment of collecting points, transit centres and assembly centres required for the orderly rearward movement of displaced persons during combat; (4) made a fundamental distinction between the care to be given displaced persons of United Nations nationality and that to be provided for axis nationals; (5) defined the responsibilities and duties of Allied repatriation officers; and (6) fixed a system of individual registration and identification, with an instruction book in 19 languages for the control and issuance of repatriation visas for displaced persons.

Table 1.—Estimated Number of Displaced Persons in Germany and Austria, May 1944

Country of Origin	Total
France	2,320,000
U S.S.R	1,840,000
Poland	1,403,000
Belgium	559,000
Netherlands	402,000
Czechoslovakia	350,000
Yugoslavia	328,000
ltaly	195,000
Baltic States	100,000
Hungary	65,000
Denmark	45,000
Germany (in Austria)	40,000
Luxembourg	30,000
Bulgaria	25,000
Rumania	14,000
Greece	12,000
Norway	10,000
Total	7,738,000

In comparing the totals in Table I with those given in Table II, certain comments are appropriate: (1) The governments in exile for the most part deliberately exaggerated the totals for their countries to mislead the nazis in their recruiting program; (2) No estimate was ever furnished by the soviet authorities, probably because they themselves did not know; and (3) these estimates are really only comparable to those given in Table II for western Europeans since it was not known how many Poles, Czechoslovaks, Hungarians and Rumanians were uncovered and repatriated from the areas under soviet control.

Feverish preparations were made to implement the plan while it was still in draft stage. Working arrangements were made with the London governments in exile and

with the soviet embassy for the assignment and training of Allied repatriation officers, and training for the first of several thousand was begun. A training course for upward of 1,000 key Anglo-U.S. military government officers was given at training centres in Manchester and Eastbourne, England. Initial distributions of identification and registration forms and instructions were made. Finder lists and maps showing concentration camps and general housing capacities of cities and towns, mass housing facilities and a variety of related data were prepared and distributed. Supply estimates involving hundreds of thousands of tons were made and included in the overall requisitions. Preparations were completed just prior to D-day in June 1944.

Combat Operations.—The Normandy landings uncovered only a few thousand fortification workers, and even by the fall of 1944 only 50,000 displaced persons had been liberated. The nazis obviously were evacuating these labourers behind their lines for work in war factories within Germany. However, the enormous task of caring for more than 1,000,000 French, Belgian and Netherlands war refugees provided vital training in mass feeding and housing for the officers and men of the Anglo-U.S. armies and resulted in a nucleus of skilled personnel able to cope with the tenfold larger problem ahead in Germany.

The winter and spring months of 1944 saw the beginning of the U.N.R.R.A. program for recruiting assembly centre teams. Administrative difficulties of integrating the international personnel of this civilian agency into the Anglo-U.S. military organization during combat were overcome, and the first U.N.R.R.A. "spearhcad" teams of eight welfare workers each were on their way to assembly centres in the forward areas by the middle of April 1945. Forward areas were cleared of displaced persons in preparation for the Allied spring offensive. Valuable experience was gained in moving some 50,000 displaced persons rearward in trains of straw-lined boxcars.

With the beginning of the final Allied offensive late in Feb. 1945, German commanders no longer continued to evacuate displaced persons rearward, but sought to embarrass the Allied advance by pushing these unfortunate people forward. Thus during March more than 200,000 displaced persons were liberated and this number increased in rapid geometric progression to upward of 6,000,000 persons by the time of the collapse of the German armed forces on May 8, 1945. Conditions were chaotic for a period of two or three months, and it was fortunate that winter had given place to the warm weather of spring and summer. Rapid repatriation of western Europeans kept pace with the Allied advance. Displaced persons by the hundreds of thousands were loaded in empty returning supply trucks and unloaded and reloaded at railheads for train journeys to their homelands. Thousands of aeroplanes, after bringing food, gasoline and munitions to combat troops were similarly loaded with displaced per-

The rapid repatriation of Frenchmen, Netherlanders and Belgians was a saga of World War II. In the three months of April, May and June 1945, some 1,500,000 Frenchmen, 250,000 Netherlanders and 250,000 Belgians and Luxembourgers were repatriated. But the western Europeans were only 40% of the problem. The remaining 60%, eastern and southeastern Europeans, could not be so easily repatriated.

The displaced persons who could not be repatriated immediately were accommodated in some 800 assembly

centres (mass housing units consisting of bombed out barracks, schools and other public buildings), fed almost 100% from German food supplies, dusted by the million with DDT powder, and given essential medical treatment and first aid.

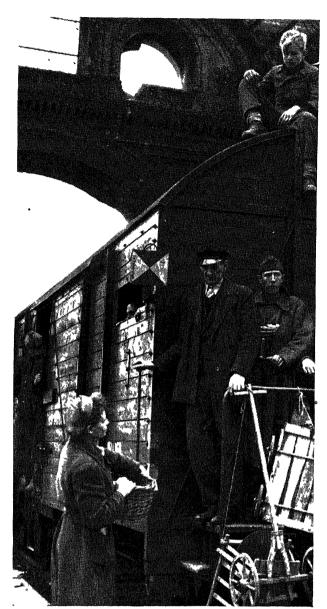
The displaced persecutees found in concentration camps presented by far the greatest problem. More than 300,000 such persecutees were liberated, but the majority of them were required to remain in camps for short periods of quarantine to prevent the spread of typhus, diphtheria, dysentery and tuberculosis. Tens of thousands of advanced cases of starvation required careful treatment. Complete army hospital units were mobilized for service within these camps, and local German civilians and Wehrmacht prisoners of war were requisitioned by the thousands to clean the premises. The rapidity with which this problem was solved, resulted in saving the lives of thousands.

During May 1945 arrangements were quickly made among the British, U.S. and soviet authorities for the repatriation of soviet citizens from the S.H.A.E.F. area, and western Europeans and former prisoners of war from the soviet area. Rail, air and truck transport was used to the fullest extent possible, and by the end of August 2,000,000 soviet citizens had been returned and 454,000 western Europeans repatriated. Arrangements were made in June between S.H.A.E.F. and the Mediterranean Allied command (A.F.H Q.) in Italy for a two-way movement via the Brenner pass and through Switzerland of Italians from Germany, Austria and France, and of German prisoners of war, German civilians and a few thousand western and eastern Europeans from Italy. By the middle of September 580,000 Italians had been repatriated. Concurrent with the movement of soviet citizens and Italians, 135,000 Czechs were repatriated via Pilsen from the west and through Budweis from Austria; 200,000 Yugoslavs were repatriated across the Austrian border just north of Jesenice; and 12,000 Greeks were returned to Athens by air or overland via the Brenner pass, Italy and small coasting vessels to ports of the homeland. By the end of the summer all remaining French, Belgians, Netherlanders, Danes and Norwegians desiring repatriation had been returned, and a start had been made on repatriating Poles, Germans from Austria, Rumanians and Hungarians. The period of mass repatriation was over. Five million displaced persons had been repatriated, but more than 1,000,000 remained as a care and welfare problem for the winter months.

Static Period, Winter of 1945-46.—At the beginning of Oct. 1945 the Anglo-U.S. program for displaced persons stood as indicated in Table II. Polish nationals, numbering

Table II.—Summary of the Displaced Persons Situation in Germany and Austria, Sept. 30, 1945

Country of Origin	Repatriation Unlikely	Repatriation Likely	Repatriated	Total Processed
Soviet Union	_		2,034,000	2,034,000
France		a few	1,512,000	1,512,000
Poland	207,000	630,000	94,000	931,000
Italy	<u> </u>	10,000	586,000	596,000
Belgium and Luxembourg .	_	a few	298,000	298,000
Netherlands	_	a few	274,000	274,000
Yugoslavia	25,000		204,000	229,000
Czechoslovakia	3,000	_	135,000	138,000
Hungary	<u> </u>	150,000	16,000	166,000
Germany (in Austria)		112,000	51,000	163,000
Latvia	61,000	-	1,000	62,000
Lithuania	47,000			47,000
White Russian	32,000			32,000
Jewish	25,000			25,000
Estonia	21,000		_	21,000
Rumania		10,000	5,000	15,000
Greece	_	2,000	12,000	14,000
Norway			6,000	6,000
Denmark	_	_	5,000	5,000
Bulgaria			2,000	2,000
Others and Unclassified .	147,000		24,000	171,000
Totals	568,000	914,000	5,259,000	6,741,000



Displaced persons crowded into all available travel space, inside and outside of trains leaving Berlin in 1945. The city was swollen with DP's in transit

837,000 persons, represented the major problem, and only 25% of these were unwilling to be repatriated. Balts, Yugoslavs and ex-enemy Hungarian and Rumanian nationals comprised the majority of the remainder.

The repatriation of Poles was delayed by unwillingness on the part of the soviet authorities to allow repatriation across their area of Germany during September and October, while they satisfied themselves that all soviet citizens had been returned from western Germany and Austria. Actually, the movement of soviet nationals had dwindled to a small trickle during these two months. The few movements of Poles were made by way of Pilsen and Praha to the Katowice area, through the co-operation of the Czechoslovak government. As for the Hungarians and Rumanians, in this case with full soviet co-operation, their repatriation was quickly completed before the end of Nov. 1945.

Thus, with the onset of winter the Poles, the Balts, the White Russians, the claimed but not accepted Yugoslavs and Czechs, and some 20,000-30,000 Jews and other

Germans who had been inmates of nazi concentration camps remained as a joint responsibility of the Anglo-U.S. armies and some 5,000 U.N.R.R.A. assembly centre workers.

Well before the beginning of cold weather, late in 1945, extensive programs of assembly centre improvement and winterization had been undertaken. Buildings and heating plants were repaired and wood fuel collected; adequate distributions of army and U.N.R.R.A. supplies of winter clothing, shoes, blankets and hundreds of other items were made; extensive welfare programs, calculated to make the displaced persons contented with their lot, were undertaken; rations were increased from a minimum of 2,000 calories per person per day to 2,300 calories for all United Nations displaced persons. Jews and other persecutees were alloted 2,500 calories. Insofar as possible, each assembly centre was operated under committees of residents elected by democratic means. But notwithstanding these improvements, the necessity for mass care (which was the only way such large numbers could be maintained in isolation from the hated German civilian), resulted in drab over-crowded living quarters, dull tasting food, and isolation and uncertainty about the future in a state of enforced idleness. Unhappiness and discontent became the rule rather than the exception.

Situation in Fall of 1946.—By Sept. 1946 substantial progress had been made in solving the displaced persons problem in the British, U.S. and French zones of Germany, with 885,000 persons repatriated (compare Tables II and III). The condition of displaced persons was materially improved. Assembly centres were consolidated into the best facilities available and made comfortable for winter occupancy. Recreational, educational, religious and employment programs relieved the monotony. Displaced persons received abundant rations, averaging from 2,000 to 3,000 calories per person per day. Hundreds of tons of amenity supplies were distributed. Thus, displaced persons enjoyed a higher living standard than did the nationals of most European countries, and one markedly superior to that of the German civilian, who subsisted on 1,000 to 1,500 calories. Notwithstanding abundant rations and remedial efforts by U.N.R.R.A., displaced persons for the most part were discontented. Unrest developed, marked by a disproportionate amount of crime, ranging from black market operations to acts of extreme violence. Efforts continued to persuade displaced persons to volunteer for repatriation, and to eliminate unqualified persons, but 370,-000 Poles remained who did not desire repatriation, 56,000 additional Balts were admitted to assembly centres, and 95,000 Jews infiltrated from Poland and Hungary.

U.N.R.R.A. extended the scope and efficiency of its operations and signed agreements with the British, U.S. and French authorities permitting operations as a quasi-independent organization responsible for management of assembly centres, distribution of amenity supplies, supervision of voluntary relief agencies and operation of a central tracing bureau. The military agreed to furnish basic supplies of food, clothing and medicines, buildings and other assembly centre facilities, police protection and supervision of some 500 Allied repatriation officers. It also agreed to negotiate transfer points, routes and modes of travel and other considerations of repatriation movements.

Assembly centres were operated by U.N.R.R.A. on a democratic self-help basis. Residents were formed into committees dealing with all aspects of life in each centre. U.N.R.R.A. and its affiliated agencies assembled qualified

Table III.—Summary of the	Displaced Perso Repatriation	ns Situation i Repatriation	n Germany, Se	pt. 30, 1946 Total
Origin	Ünlikely	Likely	Repatriated	Processed
Soviet Union France Poland Italy Belgium and Luxembourg Netherlands Yugoslavia Czechoslovakia Hungary Germany (in Austria) Latvia	6,000 200,000 — 23,000 2,000 — 96,000	1,000 169,000 1,000 1,000 2,000 — 6,000	2,041,000 1,556,000 590,000 592,000 309,000 208,000 139,000 113,000 163,000	2,047,000 1,557,000 959,000 310,000 308,000 231,000 141,000 119,000 163,000 97,000
Lithuania	58,000	_		58,000
White Russian*	<u> </u>			·
Jewish	120,000 31,000 — — — —	4,000 A Few	4,000 10,000 14,000 6,000 5,000 2,000	124,000 31,000 14,000 14,000 6,000 5,000 2,000
Others and Unclassified .	39,000	30,000	86,000	155,000
Totals	575,000†	214,000†	6,145,000	6,934,000

*Included in others and unclassified.
†Of these totals, aggregating 789,000 displaced persons, 348,000 were in the British, 404,000 in the U.S. and 37,000 in the French zones.
‡Based on official government sources. Whereas these totals undoubtedly represent, for the most part, repatriates from Germany and from the soviet zones, yet they are known to include some repatriates from the United Kingdom, Sweden, Switzerland and other traceruisid areas. other unoccupied areas.

welfare workers, warehouse managers, teachers, doctors and nurses who relieved the military of a great burden, kept unrest to a minimum, and made lasting contributions in rehabilitating millions of displaced persons.

Repatriation was slow, but the 850,000 persons repatriated required difficult individual persuasion, complex transit negotiations, and the overcoming of problems of winter movement. Polish repatriation had begun in the autumn of 1945 with train movements through Czechoslovakia to the Katowice area, truck movements from Lueneburg to Stettin on the Oder, and ship movements on the Baltic from Luebeck to Gdynia. By the end of Dec. 1945, 300,000 Poles had been repatriated. Then bitter winter weather and unfavourable reports from Poland resulted in slowed and intermittent repatriation, so that by Sept. 1946 only 200,000 additional Poles were repatriated. Hungarian repatriation started slowly in Dec. 1945 after protracted negotiations with the soviet authorities who required the screening out of suspected collaborators, volksdeutsche, and former soldiers in the German army. Intermittent train movements commenced via Linz and Heygesholm and continued until the summer of 1946. Hundreds and even thousands of a score or more of other nationalities continued to be repatriated. Delay resulted from personal fear of political consequences, profitable employment in Germany, illness requiring hospitalization, family ties with German civilians, anticipated future business opportunities and a variety of transport difficulties.

At the close of hostilities, approximately 25,000 Jewish displaced persons, all former concentration camp inmates and persecutees, were uncovered. Special Jewish centres were established. Increased rations and special care administered by Jewish voluntary relief agencies quickly restored this Jewish group to tolerably good health. Persistent reports of anti-Semitism in Poland coincided with the arrival of a few hundred Polish Jews at U.S. centres in Bavaria. Interrogations of many of these new arrivals revealed that they had been guided to Bavaria by their kin who had returned to Poland for that purpose. These initial infiltrations swelled in numbers so that by the summer of 1946, 90,000 Polish and some Hungarian Jews had arrived, almost exclusively in the U.S. zone. Strenuous efforts to block infiltration succeeded for the British and French but continued steadily in reduced numbers into the U.S.

zone. Whether or not this infiltration was a well-organized movement assisted by outside funds to force action on the Palestine question was beside the point. The fact was that these people had arrived and desired access to Palestine or to the U.S.; their presence was an expensive burden. (See also Allied Military Government; Minorities; Prison-ERS OF WAR; UNITED NATIONS; UNITED NATIONS RELIEF AND REHABILITATION ADMINISTRATION.) (M. J. P.)

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District of Columbia

See Washington, D.C.

Divorce

See Law; Marriage and Divorce.

Dobruja

See Bulgaria; Rumania.

Dodecanese

The Dodecanese is a group of 12 formerly Turkish islands in the southeastern part of the Aegean sea. The most important of the islands is Rhodes; other large islands are Cos, Kalymnos and Leros. Area 1,035 sq.mi., pop. (April 21, 1936) 140,848. Capital Rhodes (pop. 27,466). Of the total population in 1936 the Greeks formed 85%.

The islands were Turkish for several centuries before they were occupied by Italy in the course of its war against Turkey in 1912. They were officially ceded to Italy by Turkey in the treaty of Lausanne which came into effect in 1924. This cession included also the small island of Castelrosso with its strategic position on the Anatolian coast. Following the defeat of Italy in World War II, Greece demanded the cession of the islands in view of the large majority of Greek inhabitants and also Italy's wanton act of aggression against Greece in Oct. 1940. The Greek demand was supported by the United States and Great Britain. The U.S.S.R. was reported to have objected to the outright transfer of the strategic islands to Greece and to have demanded either a trusteeship over the islands or at least a cession of naval and air bases there. At the meeting of the foreign ministers of the four big powers in Paris on June 27, 1946, however, it was unanimously decided to give the Dodecanese Islands to Greece and to demand their complete demilitarization. (See also Italian COLONIAL EMPIRE.) (H. Ko.)

Dodecanese: Statistical Data, 1938 (Aegean Islands)

`Item	Value (000's omitted)	Amount or number
Exchange rate United States	,	1 Lira = 5.26c 92.7 to 94.8 Lire = £1
Crops Olives Wheat Barley		10,796 tons 3,709 " 2,615 "
Livestock Goats		62,735 51,907
Exports—Total Animals and animal products Beverages, spirits and oils Cereals flour, and dough	\$1,149 (£235) \$367 (£75) \$199 (£41) \$138 (£28)	•••
Imports—Total	\$8,281 (£1,694) \$1,497 (£306) \$1,032 (£211)	•••

Doenitz (1892—), German naval officer, was born Sept. 16, 1892, in Berlin. Commissioned an ensign in the Imperial German navy in 1913, he served in a submarine division during World War I. Taken prisoner by the British in 1918, he was repatriated in 1919. On his return to Germany, he rejoined the German navy. (The prosecution at the Nuernberg war crimes trial in 1945 charged that Doenitz assisted in construction of hidden U-boats in violation of the Versailles treaty and in training crews to man them.) He was chief of the U-boat force, 1939—43, becoming grand admiral and commander in chief of the German navy in 1943.

On May 1, 1945, Doenitz announced the death of Adolf Hitler and declared himself successor to the fuehrer, at the latter's express designation. Doenitz conceded in a broadcast on May 5 that resistance against the western Allies had become "senseless," and ordered his envoys to sign Allied surrender terms on May 7 at Reims, France. On May 23, the Allies dissolved his government and arrested him. He was one of the principal defendants at the Nuernberg trials that started Nov. 20, 1945. The court's ruling of Oct. 1, 1946, exculpated Doenitz of charges that he was a party to the nazi conspiracy to wage aggressive war, but convicted him on two counts: that he did commit crimes against the peace and that he violated customs of war. He was sentenced to 10 years of imprisonment.

Dog Racing

The pari mutuel betting lure stimulated dog racing considerably in the United States during the decade 1937–46, with 1946 marking a new high in attendance, value of purses and wagering. Two states, Massachusetts and Florida, were the meccas of the sport, with lesser racing at Phoenix, Ariz., and Portland, Ore. Winter racing was centred at Florida's 11 tracks, while the summer concentration was in Wonderland, Massoit and Taunton, all near Boston, Mass.

A review of the 12-year history of Wonderland, largest of the dog tracks in the United States, served to prove the growth of greyhound racing. When the track opened in 1935, 4,500 people attended the inaugural and bet \$48,000. In 1946, opening night drew 23,000 people who bet

Start of the open stake event in the annual field trials at Pinehurst, N.C., in Jan. 1945. Ricochet Guy (left) finished in second place \$600,000. Thereafter, throughout 1946, Wonderland nightly averaged 18,000 in attendance and \$500,000 in pari mutuel handle for the 100-night meeting.

Breeding of greyhounds also increased during the ten years, perhaps twofold. It was estimated that there were 100,000 greyhounds in breeding each year. In 1945, a record \$30,000 was offered Ray E. Holmes of Revere, Mass., for his two-year-old sensation, Lucky Pilot, but was relused. In England, where dog racing was run on a larger scale than in the United States, the record sales price up to 1945 was \$10,000 for Magic Bohemian, a greyhound which attracted attention by winning a 525-yd. race in 29.1 sec.

Purse money increased apace of interest in the sport, and in 1946 \$10,000 was distributed in the American Challenge Cup series. In 1945, a record payoff of \$2,850 was made for a daily double winner at a Miami track.

Like horse racing, the greyhound sport suffered when war conditions forced a half-year ban on animal racing in the United States during 1944. That year also brought dog racing one of its biggest tragedies, when a kennel fire at Phoenix destroyed 60 greyhounds.

Three outstanding runners marked the progress of dog racing in the United States during the decade. Foremost was Rural Rube, regarded as the "Man o' War" of the greyhounds. Next in 1941, came Never Roll, which set four world records and tied another. Into prominence in 1946 came Lucky Pilot, son of Never Roll, which in his first dozen starts as a 2-year-old broke one and tied two of his sire's world records. (M. P. W.)

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Dog Shows

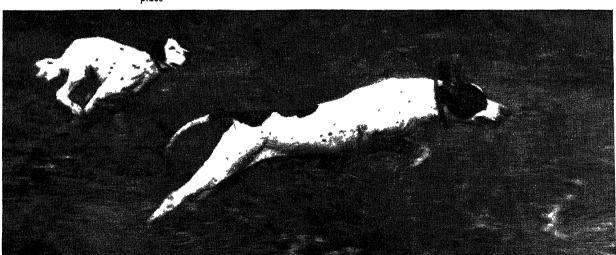
See Shows (Animal).

Dominica

See WEST INDIES, BRITISH.

Dominican Republic

A West Indian republic, sometimes (but incorrectly) referred to as Santo Domingo, the Dominican Republic occupies the eastern two-thirds of the island of Haiti or Hispaniola. Area, 19.325 sq.mi.; pop. (July 1945 est.),



2,029,054. The population by the 1935 census was 1,479,417; later official estimates of population were: 1939, 1,656,219; 1944, 1,969,773. Almost two-thirds of the population lives in the Cibao lowlands in the north; most of the rest live in the vicinity of Ciudad Trujillo on the south coast. Racial distribution is estimated to be 15% white, 15% Negro and 70% mestizo. The population is predominantly rural and agrarian; only about 15% live in cities. The birth rate in 1941 and the death rate in 1940, both based on incomplete data, were respectively 31.4 and 9.3 per 1,000. The capital is Ciudad Trujillo (formerly Santo Domingo) with a pop. (1946 official est.) of 131,271 (1935 census 71,091). Other cities (with 1945 pop. estimates) are Santiago de los Caballeros (54,113), San Pedro de Macorís (22,728), San Felipe de Puerto Plata (15,610).

The executive branch is headed by a president elected directly for a five-year term and eligible to immediate reelection; the legislative branch is a bicameral congress including a senate of 19 members and a chamber of deputies of 40, members of both houses being elected directly for five-year terms; the judiciary is headed by a supreme court of justice. Presidents during the decade 1937–46: Generalissimo Rafael Leónidas Trujillo y Molina, 1930–Aug. 16, 1938; Dr. Jacinto B. Peynado, Aug. 16, 1938–March 7, 1940; Dr. Manuel de Jesús Troncoso de la Concha, March 7, 1940–Aug. 16, 1942; Gen. Trujillo, after the latter date.

* * *

THE PRINCIPAL development of 1937 was the Dominican massacre of Haitians near the common border of the two republics. A long-standing boundary dispute between the two had been settled in Feb. 1935, but feelings, especially along the border zone, continued strained, particularly because of the casual and irregular migration of Haitian peasant farmers across the boundary for work on the Dominican side. Haiti's population density being much greater (about 300 per sq.mi.), this helped relieve the population pressure but caused almost chronic ill will. The climax came in large-scale disorders, beginning in Oct. 1937, which resulted in the killing of large numbers of Haitians, some estimates running above 7,000. The attacks were allegedly condoned by the Dominican government with the result that considerable hostility, popular and official, was directed from abroad toward the administration of Pres. Trujillo. The Haitian government requested an international investigation, but this was opposed by Trujillo. The matter was resolved by the Permanent Committee of Inter-American Conciliation on Jan. 31, 1938, with the Dominican government agreeing to pay Haiti an indemnity of \$750,000.

Pres. Trujillo decided not to continue in office beyond 1938, and the candidate of the Dominican party (the only party legally permitted in the republic) in the election held in May 1938 was Dr. Jacinto B. Peynado, a political lieutenant of Trujillo. Peynado was elected without opposition and was inaugurated on Aug. 16.

Favourable international attention was attracted early in 1939 by proposals made for the colonization of up to 100,000 Jewish and other refugees from central Europe in the Dominican Republic. The project was an outgrowth of the Evian refugee conference in 1938. Gen. Trujillo contributed a 26,000-ac. estate in the northern part of the republic as a nucleus, to which later additions were made. A commission appointed by the Inter-Governmental Committee on Refugees began in March 1939 a study of the

feasibility of such large-scale colonization.

Pres. Peynado died March 7, 1940, and was succeeded by Vice-Pres. Manuel de Jesús Troncoso de la Concha, a lawyer by profession and a former rector of the University of Santo Domingo. The change had little practical significance, however, because Gen. Trujillo retained strong political control of the island republic. Plans for the resettlement of European refugees continued. The vanguard of the Sosúa colony reached the country in May and began development of the estate given by Trujillo. By the end of 1940, some 500 settlers, mostly German Jews, were at Sosúa. Trujillo in 1941 gave 50,000 ac. of land to the colonists. Various agencies in the United States, including the Brookings institution, extended technical aid by lending experts in such fields as rural electrification, sanitation, and tropical forestry. In commemoration of Trujillo's part in establishing the Sosúa colony, the Foundation for the Redemption of Israel, with headquarters at Jerusalem, gave him an illustrated album and diploma in 1946. Charges were made in Aug. 1940 that the Dominican-German Scientific institute, founded in 1937, was engaged in fifth-column activity. The economic impact of the war was hitting the republic hard by 1940 and continued to do so in later years; the cost-of-living index by the end of 1943 had reached 190 as against 100 in 1939.

The Dominican government concluded a highly important treaty with the United States early in 1941 abrogating the right of the latter government to supervise the collection of Dominican customs, a galling concession in effect since the modus vivendi of Feb. 1905. The Dominican government on April 1 formally took over the collection of customs. The government gave further evidence of cordial relations with the United States by declaring war against all major axis governments in Dec. 1941 within a few days after the attack on Pearl Harbor. Other signs of close co-operation with the United States included the authorization, in March, of a \$300,000 loan by the United States Export-Import bank to supplement a \$3,000,-000 credit of Dec. 1940. With technical assistance from the United States, the Dominican government continued its efforts in 1941 to establish a rubber industry in the republic.

The outstanding political event of 1942 was the return to office of Gen. Trujillo. The election was held in May; Trujillo, unopposed as the candidate of the Dominican party, was elected to a new five-year term. This was the first national election in which women were allowed to vote, changes in the electoral system having been introduced by constitutional amendments in 1942. One woman senator was elected and three other women were chosen deputies. Dominican economy was increasingly seriously affected by the disruption of shipping facilities caused by World War II. During the year, the government took over all stocks of automobiles, both new and used, as well as all supplies of rubber; it also instituted both gasoline rationing and traffic control. Shortages in food supplies resulted in the formation of national commissions to set price ceilings, encourage rice production and regulate trade. The government early in May prohibited the export of livestock, meat, eggs and some other foodstuffs.

The Dominican government took action early in 1942 to prevent subversive activity within its boundaries; the attitude was of especial importance because the strategic location of the island made it significant in hemisphere defense. Axis minority groups were not large (estimated at 140 Germans plus 100 nationals of German descent and 350 Italians plus 400 nationals of Italian descent), but the government took over property owned by alien enemies



Refugee camp for persons made homeless by a series of violent earthquakes which shook the Dominican Republic in Aug. 1946, levelling four towns, killing several scores of persons and leaving a wave of epidemics in its wake

and forbade axis nationals to acquire motor vehicles. All boats in national waters were placed under government jurisdiction, and regular inspections of the coast were instituted to prevent the axis from establishing secret bases on Dominican territory for supply of submarines in the Caribbean. Emphasis was given to the need for control of the movement of United States currency when a Spanish shipmaster was reportedly seized during the year with \$220,000 of "hot" money in his possession. The government in July enacted the necessary legislation to prevent the export and import of such currency. The acute passenger transit problem was somewhat relieved during the year by the granting of a new contract to British West Indian Airways and by other expansion in air communication.

Shipping operations improved in 1943 as the submarine menace abated, but shortages of consumption products continued, especially in such items as gasoline, iron and steel products and electrical appliances. Truck operation was reported as reduced by 60% and horse-drawn vehicles were used wherever available. The government set up control commissions for several commodities such as textiles and nails, but in spite of price-fixing legislation the cost of living steadily increased. An agricultural diversification program, started in the early 1930s, resulted in basic food conditions that were much better than in some other

Caribbean states. Some foodstuffs (rice, for example) were available for export, although a few years earlier they had been imported in substantial amounts. Unemployment was not a serious problem, although it had been at times earlier. An important labour law passed during the year established procedures designed to expedite recognition of labour federations, associations and unions. The administration established official censorship of all means of communication on April 16. Both the United States and the Peruvian legations were raised to the status of embassies during 1943, with the Dominican government reciprocating.

In Jan. and Feb. 1944, the republic celebrated, with elaborate ceremonies, the centennial of its independence from Haiti; the celebration ended Feb. 27. The year was otherwise a quiet one both in internal and foreign affairs. The 1945 and 1946 sugar crops were placed under contract at the end of May with the British Food administration, at a price per pound to be fixed subsequently but guaranteed not to be less than that eventually set for the Cuban crop. The 1943-44 crop, a record one of more than 600,000 short tons, was under contract for sale to the United States, which had also arranged, in Dec. 1943, to take the entire Dominican molasses output for the year 1944. The United States likewise agreed to purchase surplus peanuts, beans, cattle, corn and rice, and was given an option to buy butter, eggs, fresh vegetables and fruit. The government announced a program of agricultural education during 1944. The congress passed a labour contract law and May 1 was established as a labour holiday. The inflationary trend characteristic of the hemisphere continued to affect the Dominican Republic, and shortages of certain manufactured items, especially tires and transportation equipment, were serious. The government awarded to a Puerto Rican engineer a contract for the expenditure of \$2,000,000 for the improvement of port facilities at Ciudad Trujillo. In the fall of 1944 it began crystallizing plans for the expenditure of \$2,500,000 for improvements at San Pedro de Macorís, the chief sugar port of the republic. The government in August announced the opening in different parts of the country of low-cost dining rooms serving about 3,600 meals a day at a cost of 10 cents a meal. It also set up a register of unemployed persons. The minimum wage laws were extended to include added groups of food and garment workers. The government on July 24 authorized the use of \$50,000 in United States subsidiary coinage and simultaneously forbade the export of gold.

On May 29, 1945, Pres. Trujillo invited political leaders to reorganize the country's political parties, all of which (except the Dominican party) had been outlawed since 1930; he announced that the country had progressed far toward political maturity and that new parties might function either in co-operation with or opposition to the government. He also invited political exiles to return to the country and guaranteed them safety and freedom of action. His opponents were slow to take advantage of these generous offers, however, and seemed skeptical of the president's good faith. The government created a new administrative department, Labour and National Economy, on June 1, 1945. Other administrative activity during the year included the establishment of an agricultural loan bank, announced April 7, and construction of low-cost housing for workers and governmental employees earning less than \$100 a month; for the latter purpose, the president in November submitted a bill to the congress for the

expenditure of \$5,000,000 for 25,000 such houses.

The foreign office announced in March that diplomatic relations with the U.S.S.R. had been established. Dominican representatives at the United Nations conference at San Francisco in June signed a nondiscrimination treaty with China. The Dominican Republic in September became the third state to sign the United Nations charter, with the congress also approving the statute setting up the International Court of Justice. A mission representing the United Nations Relief and Rehabilitation administration visited the republic in April to arrange for contributions and the government subsequently announced that it would make a preliminary gift of \$350,000, two-thirds of which would be paid in corn. It subsequently made additional payments recommended by U.N.R.R.A., bringing its total contributions up to \$1,400,000. The end of World War II brought relaxation of a number of wartime restrictions affecting economic activity; the government removed import controls on all but a few critical items on Oct. 1, 1945. The United States in the same month revealed that military lend-lease goods supplied to the Dominican Republic up to July 1945 had amounted to \$1,140,000 in

value. The government announced late in 1945 that it expected a new 360,000-barrel cement plant to be completed by the end of that year.

A new labour law dated Jan. 4, 1946, established an 8hour day and a 48-hour week for various classes of workers, but the alleged ambiguity of the law led to restlessness among labouring classes in subsequent weeks. The government in July paid its full assessment of \$12,250 to the working capital fund of the United Nations, according to announcement made Aug. 1 by Sec. Gen. Trygve Lie. The republic made elaborate plans to celebrate the 450th anniversary, on Aug. 4, 1946, of the founding of Ciudad Trujillo (named Santo Domingo until 1936) by Bartolomé Columbus. On the same day, however, the country's most serious disaster in many years struck in the form of a heavy earthquake, followed by a disastrous tidal wave in the northern part of the republic. Cities most seriously hit by the quake were Santiago, San Francisco de Maçorís and Puerto Plata; the inland town of Moca (pop., 8,720) also suffered loss of life and much damage, as well as the smaller localities of Matanzas and Samaná. Repeated, but lesser, shocks came in the two weeks following the original

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		Republic: Statis			•••	
İtem	1938 Value (000's omitted)	Amount or number	Value (000's omitted)	Amount or number	Value (000's omitted)	Amount or number
Exhange rate United States	•	U.S. dollar (also peso of 20 cents)		U.S. dollar		U.S. dollar
Great Britain		*		*		*
Finance Government revenues	\$12,089 (£2,473) \$12,297 (£2,515) \$15,605 (£3,192)		\$12,140 (£3,170) \$12,135 (£3,168) \$16,160 (£4,219)		\$16,800 (£4,164)† \$14,782 (£3,663)† \$29,600 (£7,336)	
Transportation Railroads		793 mi.‡ 3,900 mi.‡ 366 mi.‡ 214 mi.‡				
Communication Telephones		2,949				2,796
Minerals Gold (exports only)		5,275 oz.				
Crops Sugar cane		475,868 tons 215,593 " 164,243 " 70,767 "		4,518,147 tons 148,744 " 83,452 " 47,473 "		
Livestock Poultry				3,041,072 818,522 783,015		
Forest products Cedar		2,073 tons 1,215 " 1,215 " 971 " 933 "				710 tons † 1,410 " † 528 " † 26 " †
Manufactures Total	\$23,157 (£4,737) \$16,293 (£3,333)		\$28,914 (£7,549) \$21,589 (£5,637)		\$46,383 (£11,495)§ \$32,325 (£8,011)§	•••
Chemical	\$1,806 (£369) \$889 (£182) \$814 (£166)		\$1,623 (£424) \$1,076 (£281) \$706 (£184)	•••	\$3,358 (£832)§ \$1,370 (£340)§ \$2,130 (£528)§	•••
Exports—Total	\$14,347 (£2,935) \$8,664 (£1,772) \$1,918 (£392) \$1,040 (£213) \$616 (£126) \$404 (£83)	447,000 tons 31,000 " 9,000 " 120,000 " 8,000 "	\$20,057 (£4,971)† \$10,362 (£2,568)† \$2,482 (£615)† \$1,453 (£360)† \$887 (£220)† \$286 (£71)†	372,000 tons† 209,000 " † 20,000 " † 9,000 " † 54,000 " † 4,000 " †	\$60,269 (£14,937) \$44,027 (£10,911) \$4,000 (£991) \$2,136 (£529) \$3,909 (£969) \$224 (£56)	1,169,000 tons 832,000 " 28,000 " 10,000 " 235,000 " 1,000 "
Imports—Total Cotton and manufactures Foodstuffs Iron and steel manufactures	\$11,342 (£2,320) \$1,998 (£409) \$1,431 (£293) \$1,142 (£234)	19,947 tons	\$11,481 (£2,845)† \$3,320 (£823)† \$761 (£189)† \$574 (£142)†	93,438 " † 10,517 tons†		5,333 tons
Defense Standing army personnel Standing air force personnel Military expenditures	\$1,900 (£389)			3,1 <i>47</i> 71	· · /2 · 2 (2000)	•••
Education Primary schools Enrolment Secondary schools Enrolment Vocational schools Enrolment	. ,	845 7 46		7639 123,6419 169 3,1339 579 3,7029		1,896‡ 203,990‡ 79‡ 7,545‡
*Quoted in terms of U.S. exchange. 1937.	tional schools in 1937	†19 123,113.	942. ‡1939. 91941.	§19 43.		

Donations and Bequests

Despite the demands of World War II and increased taxes upon private resources, philanthropy in the United States reached new heights during the decade 1937–46. Total philanthropy in the United States was estimated at \$639,862,000 in 1936, and \$752,152,000 in 1937. By 1945, U.S. philanthropy had reached \$2,397,652,000.

While the war years found philanthropic interests directed largely toward war causes, philanthropy as a whole did not suffer greatly. The general average of giving showed an upward trend.

An index could be found in a study of giving in six cities, compiling publicly announced gifts of \$1,000 or more in six large cities—New York, Chicago, Philadelphia, Baltimore, Boston and Washington. The results of this study showed total gifts and bequests in the six cities amounted to \$107,910,706 in 1936 and \$183,347,000 in 1045.

On the basis of this index and other available statistics, the following conclusions (aside from the increase in giving) regarding philanthropy in the decade could be drawn: (1) war conditions brought forth many warrelated philanthropic causes which received support to an unprecedented degree, but the established giving-public did not desert its normal philanthropies; (2) there was evidence that new giving habits were created; many who gave to war causes had never before been contributors; (3) the weight of taxation may have cut the size of some gifts but, on the whole, it apparently had no adverse effect; (4) management and labour participated in philanthropy to a greater degree than ever before.

On the basis of the best statistics available, it seems reasonable to estimate that the U.S. public gave at least \$1,500,000,000 in cash and kind to war philanthropies during the decade. With this tremendous outpouring of contributions, the question naturally arises as to its effects upon normal philanthropies. One source of evidence, bearing on this question, may be found in the wartime support of community chests, an established means of financing local and permanent philanthropic needs.

A continuing study, made over a period of years, of 29 of the larger community chests having annual goals of more than \$500,000 showed that these chests in 1936 raised \$33,681,068. In 1945, these same 29 chests raised \$53,577.232 for their usual services. In addition, they raised \$28,953,705 for war causes. These figures indicated that generous support of war philanthropies did not affect adversely such causes as health, welfare and recreation.

Support of education during the decade was also maintained at a reasonably high level despite the demands of war. A study of gifts and bequests to 51 colleges and universities showed that for the ten years between 1930-31 and 1939-40 the average annual total of gifts to these institutions was \$42,374,000. There was a decline in giving during the years 1941 and 1942 but, by 1945, the yearly average had again risen to \$45,237,000.

The average of giving to education—as indicated by the statistics of 51 institutions—in the decade ending with 1946 was somewhat below the average for the decade ending with 1936, but with the end of the war conditions many of these institutions began to seek funds for purposes which were deferred during the war, and there was reason to foresee a decided upswing in giving to educational causes.

Two important factors in U.S. philanthropy during the

decade were increased philanthropic support by both management and labour. Figures of the United States government showed philanthropic contributions by corporations and firms during 1936 of approximately \$30,000,000. While government figures for later years were not yet available at the end of the decade, it was estimated that corporate and business gifts to philanthropy had reached \$175,000,000 in 1944, and probably were reduced but little in 1945 and 1946, with the decrease in goals sought by war organizations.

One index of the upward trend in corporation giving during the ten years could be found in the statistics of community chests and councils. In nation-wide community chest campaigns held in 1936, a total of \$81,707,787 was raised, and it was estimated that 25% of this came in corporate gifts. Of the total of \$90,379,099 raised in 1941 by community chests, 27.2% came from corporate gifts. In 1945, all community chests raised \$188,377,310 and the corporate gifts represented 34.2% of this amount. This increase was presumably the result, in part, of support of war philanthropies included in chest goals.

The element of business interest was not as easily demonstrated in many peacetime philanthropies as in wartime causes. Over the decade, however, there was a changing philosophy on the part of corporations with regard to philanthropy. The corporation came to regard itself as a part of the community and not as an organization which was apart, bound by by-laws and constitutions. Corporations recognized that what was good for the community was good for the corporation. A survey showed that 67% of business executives questioned indicated their belief that corporations and businesses had a responsibility to support community projects for common health and welfare.

Employees had always been a fruitful source of support for philanthropic purposes, but the decade saw the organization of employee-giving raised to new levels. Organized labour assumed definite responsibilities for participation in philanthropies and greatly increased the total sum of contributions coming from employees for philanthropic purposes.

The C.I.O. War Relief committee and the League for Human Rights of the American Federation of Labor were organized to centralize the giving of labour for war projects. Evidence of the extent of giving could be found in reports that the C.I.O. members gave \$33,157,174 to community war funds and the American Red Cross in 1944, and the American Federation of Labor gifts were estimated at \$40,000,000 in the same year. These figures indicated that organized labour was giving at the rate of nearly \$75,000,000 to war causes alone when the end of the war came. It is probable that an equal amount was given to normal community welfare causes.

The progress made in philanthropy during the decade was stimulated, in part, by war conditions and the readiness of the public to give in support of war purposes. Nevertheless, there was good evidence that normal philanthropies, exclusive of war causes, were not neglected but actually picked up new support in the face of war, increased taxation and decreased yield from capital investments. There was no doubt that the U.S. sense of responsibility for philanthropy had developed to an unprecedented degree during the decade.

During 1946, public announcements were made of more than 400 special fund-raising campaigns with total goals in excess of \$1,500,000,000. Thus the demands on the generosity of U.S. citizens was great. There was every reason to

believe, however, that the response would be generous but in proportion to the merits of the case presented. (See also Community Chest; Societies and Associations; War Relief, U.S.)

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Philanthropy in Britain.—The outstanding donations from 1937 to 1946 in Great Britain were those of Lord William Nussield, motor manufacturer, whose benefactions were reported to have reached more than £25,000,000. In 1937 he gave £2,000,000 to found a trust fund to aid areas with severe unemployment and also £1,300,000 to Oxford university to found Nussield college.

Bequests and gifts tended to concentrate in three directions: a vast number of bequests to hospitals and charitable societies; frequent gifts to the treasury; and gifts of land and famous mansions to the National Trust (q.v.).

In 1938, part of the Duffryn estate known as the "Kew Gardens of Wales" and valued at £500,000 was made public property. In 1940, Bateman's, Rudyard Kipling's Sussex home, was given to the nation. In 1941, Sir Charles Trevelyan gave 13,000 ac. of moor and woodland known as Wallington to the public. Cliveden, a mansion overlooking the Thames at Taplow, was given to the National Trust by Lord Astor in 1942. Sir Courtauld Thomson gave his Buckinghamshire estate, Dorneywood, and 200 ac. to the nation to be used by ministers to entertain visitors from overseas. In 1943, Lord Sackville handed Knole, near Sevenoaks, to the National Trust for public use. In 1944, Sir Richard Acland gave the trust the deeds of his 16,000 ac. of estate in Devon and Somerset. Mrs. William Heelis (Beatrix Potter) presented the trust with 4,000 ac. of her Lake district properties. Famous historical buildings given to the nation privately were Kenilworth castle and Lindisfarne castle on Holy Island.

A number of minor properties, including cliffs at Land's End, were placed in the care of the National Trust through the anonymous activities of a group of benefactors called "the Ferguson gang."

Among donations to the national exchequer was £50,000 from Lord Rothermere in 1939 as a contribution toward national armament. Lord Baldwin in 1937 gave, on behalf of an anonymous donor, £250,000 to found the New Imperial Trust to encourage interimperial relations. In the same year the Ashley library in the British museum passed into national ownership through the beneficence of T. J. Wise.

To mark the coronation of King George VI, Lord Glanely gave £30,000 to educational and charitable institutions, and Sir John Siddeley the sum of £100,000 for developing farm schools. Among gifts to the treasury in 1940 was a diamond necklace presented by an anonymous woman. It was sold for £24,400 at Christie's.

On Oct. 18, 1946, Field Marshal Jan C. Smuts, prime minister of South Africa, presented a sum of more than £1,350,000 to Clement R. Attlee, premier of Great Britain. This was a national gift from the people of South Africa, made as an expression of admiration and faith in the people of Britain. The presentation took the form of certificates for gold lying in the Bank of South Africa.

Donovan, William Joseph®

Donovan (1889-), U.S. army officer and government official, was born Ian. 1, 1889, at Buffalo, N.Y. Educated at Columbia university, he received his law degree in 1907. He organized a cavalry troop in the national guard in 1916 and served in the Mexican expedition. Attached to the "Fighting 69th" division of New York state, Donovan fought in World War I and was decorated for valour by three governments. Appointed assistant in 1924 to Harlan Fiske Stone, then attorney-general, he was renamed to that post by Pres. Coolidge, serving from 1925 to 1929. He ran unsuccessfully for governor of New York state on the Republican ticket in 1932. In 1940, he made several trips abroad to gather information on nazi fifth-column activities in Europe and on the true state of Allied resistance to the axis.

On June 13, 1942, Donovan was appointed director of the Office of Strategic Services, a "super-secret" agency charged with procuring and integrating information on axis plans and dispositions during the war. On Sept. 20, 1945, Pres. Truman ordered abolition of the agency, transferring its principal functions to the state department. Donovan was named assistant counsel at the Nuernberg war trials, Nov. 8, 1945, but left this post three weeks later to return to private practice in New York. In Aug. 1946, he was appointed head of the American Institute of International Information, a nonprofit organization designed to seek information on world problems.

Doolittle, James Harold

Doolittle (1896—), U.S. army air officer, was born Dec. 14, 1896, at Alameda, Calif., and was a flying instructor in the army during World War I. After the armistice he resumed his studies at the Massachusetts Institute of Technology, receiving a doctor of science degree in 1925. An expert pilot, Doolittle won the Harmon trophy in 1930, the Bendix trophy race in 1931 and the Thompson trophy race in 1932. He later retired from racing and joined the army board studying reorganization of the air corps reserve.

Ordered back to active duty in 1940, Doolittle led a U.S. bomber squadron that staged the spectacular daylight raid over Tokyo, on April 18, 1942, the first on that Japanese city during World War II. He was awarded the congressional medal of honour for this exploit and was promoted to the rank of a brigadier general. Transferred to the North African theatre, he was named head of the Allied bomber command in northwest Africa in Feb. 1943, and the following December he took over command of the U.S. 8th air force based in Great Britain, later becoming a lieutenant general.

After the defeat of Germany in May 1945, he and part of the 8th air force were transferred to the Pacific, but the precipitate Japanese surrender prevented him from fully exploiting his air force. When he left the army Jan. 1, 1946, he became president of the Air Force association. On March 18, 1946, he was named head of a six-man board of ex-officers and enlisted men to investigate the army's much criticized caste system. The report, published on May 27, 1946, recommended the abolition of many terms overstressing the caste differences between officers and enlisted men. (For an account of the Doolittle raid on Tokyo, see Tokyo.)

Douglas, William Orville

Douglas (1898-), U.S. jurist, was born Oct. 16, 1898, in Maine, Minn. He was educated at Whitman col-

ity, gaining 28 seats in the provincial legislature.

Dridso, A. S.

See Lozovsky, Solomon Abramovitch.

Drought

See METEOROLOGY.

Drug Administration, U.S.

The year 1937 marked a turning point in U.S. federal control of drug traffic. For four years legislation had been pending in congress, recommended by those responsible for food and drug law enforcement, to strengthen the protective provisions of the Food and Drugs act of 1906. Many committee hearings had been held on this and other food and drug bills subsequently introduced, but no new law had been enacted.

At the hearings and for many years in published reports of the chief of the Food and Drug administration it had been pointed out that the public could not be protected adequately under the existing law. There was no control over the distribution of new drugs or of dangerous drugs, no requirement that preparations for self-administration bear adequate directions and warnings. With the exception of a few specified ingredients, there was no requirement for the disclosure of the composition of secret "remedies." A joker in the 1906 act prevented court action against drugs bearing misleading claims except where guilty knowledge could be proved to the satisfaction of the court, thus putting a premium on ignorance of the therapeutic effects of medicines.

In Oct. 1937 the danger to public health of toxic drugs distributed under inadequate controls was dramatically publicized by a tragedy which resulted in more than 100 deaths in the 6 weeks that the responsible drug, "Elixir Sulfanilamide" was distributed. This preparation contained a toxic solvent but had been distributed without adequate tests. As soon as the first report of fatalities was received, the Food and Drug administration began a nation-wide roundup and recovered remaining portions of the drug. The secretary of agriculture, who was responsible for enforcement of the drug laws until the administration was transferred to the Federal Security agency in 1940, submitted a report at the request of congress on the "Elixir" incident, in which he pointed out the limitations of the law to prevent such tragic occurrences. He stated that while this case was spectacular, the actual toll of deaths from other drugs then on the market and from worthless nostrums offered for serious disease conditions was probably far greater.

Public demand for a stronger law gave new impetus to the passage of the pending legislation and on June 25, 1938, the Food, Drug and Cosmetic act became law. It corrected in large part the deficiencies in the 1906 act and brought profound changes in the production and distribution of drug products. While an adjustment period was provided for the orderly transition from the old to the new law, sections designed to protect the consumer against dangerous drugs and cosmetics went into effect immediately.

One such section related to new drugs, which could not be introduced into interstate commerce without filed applications establishing their safety for use. The Food and Drug administration's responsibility was serious; no valuable drug should be unnecessarily withheld from public use and, at the same time, new drugs should not be released without sufficient testing to establish their safety.

lege, Walla Walla, Wash., receiving his degree in 1920. After teaching high school for several years at Yakima, Wash., he entered Columbia university, receiving his law degree in 1925. He was admitted to the bar the following year. From 1925 to 1928, he lectured in law at Columbia and was associated with a private law firm in New York city. He joined the faculty of Yale university in 1928, eventually becoming a full professor and then Sterling professor of law. During the Hoover administration Douglas helped the department of commerce in analyzing bankruptcies. He was recalled to Washington, D.C., in 1934 to direct investigations conducted by the Securities and Exchange commission into bondholders committees and reorganizations. Douglas, who was commissioner and chairman of the SEC from 1936 to 1939, delivered an "ultimatum" to the New York Stock exchange to undertake self-reform or undergo government supervision. Wall street accepted self-reform, and thereafter relations between Douglas and "the Street" became more friendly.

On March 20, 1939, Pres. Roosevelt named Douglas as associate justice of the supreme court, succeeding Justice Brandeis, who had resigned the preceding month. An analysis of Douglas' court decisions from 1939 to 1946 indicated he sided with the "left side" of the bench, but also showed he had no incapacity for going along with the "right."

In 1944 Pres. Roosevelt informed the Democratic national party leaders that both Douglas and Harry S. Truman would be suitable to him as running mates if Henry Wallace was not renominated for the vice-presidency. Truman was selected.

DP'S

See DISPLACED PERSONS.

Draft

See Compulsory Service, British; Selective Service, U.S.

Drama

See RADIO; THEATRE.

Dress, Women's

See Fashions, Women's.

Drew, George Alexander

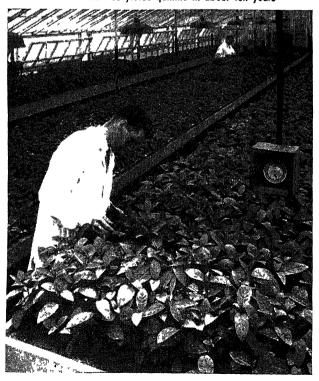
Drew (1894—), Canadian politician, was born at Guelph, Ont., May 7, 1894; he was educated at the Collegiate institute of Guelph, Upper Canada college and the University of Toronto. He enlisted in the Canadian expeditionary force in 1914, and went overseas a year later. Wounded in 1916, he was invalided home the following year and received his discharge from the army in 1919. Drew was admitted to the bar in 1920, practising in Guelph until 1925 and then in Toronto. Entering the provincial legislature, he became leader of the Conservative opposition in the legislature at Toronto.

Drew won prominence in 1942 by his denunciation of the government's action with regard to the Canadian expedition to Hong Kong. Although proceedings were initiated against him, they were dropped later. After formation of the Progressive Conservative party at the Winnipeg convention in Dec. 1942, Drew organized the party's forces in Ontario. In the general provincial elections in Aug. 1943 the Progressive Conservatives won the largest number of seats and Drew assumed the premiership and the portfolio of education. In the Ontario elections in 1945 his administration received an overwhelming major-

The new-drug provisions went into effect just at the beginning of the emphasis on chemotherapy. World War II accelerated progress in this field and resulted in the development of such potent agents as penicillin, streptomycin, tyrothricin and various sulfonamides with profound medicinal properties, and often with toxicities. Appraisal of the evidence relating to the safety of such drugs and the adequacy of production controls became increasingly complex. A total of 4,017 new drug applications had been allowed by the end of June 1946, which marked 8 years of enforcement of this provision.

The 1938 act was not intended to outlaw safe and efficacious self-medication. It required full directions for use and warnings against misuse on medicines to be sold to the lay public. The establishment by the federal security administrator of exemptions from this labelling requirement was provided where such directions were not necessary for the protection of public health. The first exemptions included prescription drugs. It developed that some manufacturers resorted to this exemption in marketing drugs commonly purchased and safely used by consumers, and omitted adequate directions from the labelling. This defeated the purpose of the act to give the consumer essential information about valuable drugs suitable for use without medical supervision. It also imposed a hardship on the retail pharmacist who had on his shelves bona fide prescription drugs and simple medicines for minor ailments, both bearing the prescription legend and both illegal for him to sell without a physician's prescription. Amended regulations became effective in Oct. 1945 designed to make a fundamental distinction between drugs which could be used by the public without medical supervision and those which could not.

Cinchona seedlings in a greenhouse of the U.S. department of agriculture at Glenn Dale, Md. Plantings were raised in quantity during 1943 as a substitute for quinine from the Netherlands Indies when normal supplies were cut off by the Japanese in 1942. The bark of the cinchona tree yields quinine in about ten years



Although seizures of violative drugs increased nearly fourfold in the ten-year period, statistics were of little value in comparing the drug picture of 1946 with that of 1937. In the latter year there were numerous worthless "remedies" on the market which the Food and Drug administration was powerless to remove from consumer channels. If a manufacturer could prove that he was so poorly informed concerning therapeutic values of drug products as to believe that worthless ingredients would cure diabetes, cancer, tuberculosis or other serious diseases, the preparation could not be removed from the market by seizure because the government could not prove fraud. After the 1938 act went into effect the offenders who had evaded court action for years under the fraud provisions of the old law, abandoned their practices either voluntarily or as a result of seizures, criminal prosecutions and injunctions brought in federal court. Products claiming the cure or alleviation of serious diseases of the type that would become difficult or impossible to cure if competent medical treatment were delayed became fewer every year. Actions increased against preparations bearing false and misleading therapeutic claims exploiting the consumer's eagerness to benefit from true scientific progress in the fields of vitamins and minerals. These preparations seldom affected the consumer's health, but they bore false insinuations of the inadequacy of the normal diet to supply required nutritional elements which resulted in a serious economic loss.

Progress in control of dangerous drugs included the immediate removal from the market, when the 1938 act went into effect, of such products as dinitrophenol, and the classification as prescription drugs of products, such as thyroid, unsafe to use without medical supervision. The requirement that all nonofficial drugs consisting of two or more ingredients bear the name and quantity or proportion of each active ingredient was also a safety provision for the physician and for the consumer acting as physician to himself.

In 1937, actions against official drugs (those listed by the U.S. Pharmacopoeia and the National Formulary) resulted largely from variations in active ingredients. By 1946, only about 20% as many actions were necessary for such violations. A far greater number resulted from injection drugs containing undissolved particles or failing to meet sterility requirements. This trend reflected the change by the medical profession from many drugs formerly used for oral administration to injection medicines. The former could often be properly assayed by a simple chemical test. A drug intended for intravenous injection required the same chemical analysis and, in addition, bacteriological testing for sterility, pharmacological testing for pyrogens and physical examination for foreign particles. Bacteriological examination was required, also, for surgical dressings, sulfonamides and other powders for use on open wounds.

During World War II, investigations were made at the request of the armed services into the toxicity and efficacy of many newly developed preparations under the various conditions of use to which they would be subjected. The administration tested all medical consignments purchased by the army, which averaged more than 1,000 a month at the high point of this program.

The act was amended in 1941 to provide for predistribution certification of insulin on a fee basis, and in 1945 similar control for penicillin was enacted. Insulin had previously been pretested under patents that were expiring, and penicillin had been tested and certified under war controls of the War Production board and the mili-

tary authorities. Both drugs were used for conditions that might lead to fatalities if they were not of the potency or purity required. The amendments were passed unanimously by congress upon recommendations by the Federal Security administrator that such control was essential to public health. (See also BIOCHEMISTRY; BOTANY; CHEMOTHERAPY; MEDICINE; NARCOTICS AND NARCOTIC TRAFFIC; VITAMINS.) (P. B. D.)

Drugs

See BIOCHEMISTRY; BOTANY; CHEMOTHERAPY; CHEM-URGY; DRUG ADMINISTRATION, U.S.; ENDOCRINOLOGY; MEDICINE; NARCOTICS AND NARCOTIC TRAFFIC; VITA-MINS.

Drug Traffic

See NARCOTICS AND NARCOTIC TRAFFIC.

Drunkenness

See Intoxication, Alcoholic.

Ductless Glands

See Endocrinology.

Dulles, John Foster

Dulles (1888—), U.S. lawyer and government official, was born Feb. 25, 1888, in Washington, D.C. He was graduated from Princeton university in 1908, and received an LL.B. degree from George Washington university, Washington, D.C., in 1911. He entered a law firm in 1911, becoming a senior partner of the firm in 1944. During World War I, he was a captain, and later a major in the army and was attached to the general staff. Following the armistice, he was assigned to the U.S. delegation as principal counsel on the Paris Peace Conference committee and helped draft provisions dealing with reparations and financial matters.

Returning to the U.S., he resumed his law practice, soon establishing a reputation as an authority in international law. When Dulles supported Governor Thomas Dewey in the 1944 presidential campaign, it was generally assumed that he would be Dewey's selection for secretary of state in the event of a Republican victory.

Dulles was named as an adviser to the U.S. delegation to the U.N. April 5, 1945. He accompanied Secretary of State James Byrnes to the first conference of the Council of Foreign Ministers in the early fall of 1945 and on his return to the U.S. he declared Oct. 6 that Byrnes was entitled to support from all political factions. He attended the U.N. sessions in London (Jan.—Feb. 1946) and later in New York city and in Lake Success participated in the trusteeship debates in November.

Dumbarton Oaks

See United Nations.

Duplessis, Maurice Lenoble

Duplessis (1890—), Canadian politician, was born at Trois Rivières, Quebec, April 20, 1890, the son of French-Canadian parents. He was graduated from Laval university, Montreal, where he obtained B.A. and LL.B. degrees. In his first candidacy for the Quebec legislature in 1923, he was defeated. Four years later he stood again and was elected. He was re-elected in 1931, 1935 and 1936. He was chosen leader of the Quebec Conservative party at its convention in 1933, but just before the national elections of 1936, he formed his own party, the Union Nationale. Duplessis' party defeated the Liberal party, which had been

in office for 39 years, and Duplessis was sworn in as premier Aug. 26, 1936. Shortly thereafter he instituted the "padlock law" which made it illegal for anybody owning or renting a building "to use it . . . to propagate communism or bolshevism by any means whatsoever." Another provision of that law made it illegal to print or distribute any newspaper or periodical that propagated or "tended" to propagate "communism or bolshevism." His party was re-elected in the provincial elections of Aug. 8, 1944.

Dust Bowl

See METEOROLOGY.

Dust Storms

See METEOROLOGY.

Dutch Colonial Empire

See Borneo; Netherlands Colonial Empire; Netherlands Indies; New Guinea; Surinam.

Dutch Harbor

See WORLD WAR II.

Dutch Literature

Before the German invasion of May 1940, the older generation of leading Dutch poets and critics, such as J. Greshoff, H. Marsman, Dr. Menno ter Braak and E. du Perron, took sides in the crisis of European civilization. Even such a retiring and introvert figure as the poet A. Roland Holst (Een winter aan zee, 1937), wrote a few verses with a prophetic-political turn, as did the Catholic lyricist Jan Engelman. An interesting discussion of Christianity was contributed by Ter Braak (Van oude en nieuwe Christenen, 1937), Anton Van Duinkerken (Verscheurde Christenheid, 1937) and H. Bruning (Verworpen Christendom, 1938). A group of younger writers did not link their verse so intimately with the cultural and spiritual crisis. Their views were most clearly expressed in the new periodical Criterium, at first under the leadership of E. Hoornik. Realities soon forced them, however, to choose sides openly, although their preference for narrative and romantic poetry remained conspicuous.

Among the older generation, the great novelist Arthur van Schendel was particularly important because, after a period of producing typical Dutch tales full of sombre motives of destiny, he began in 1938 a series of novels richer in fantasy (De Wereld een Dansfeest, 1938; De zeven Tuinen, 1939). To the best prose works of these years also belonged S. Vestdijk's Het vijfde Zegel (1937), and F. Bordewijk's Karakter (1938). The death of Albert Verwey (1865–1937) and of Willem Kloos (1859–1938) marked the end of the Nieuwe Gids group, whose influence had, indeed, long since disappeared.

The year 1940 saw the suicide of Dr. Menno ter Braak (1902–40), the death of E. du Perron (1899–1940), and of the poet and critic H. Marsman (1899–1940). Among other victims of World War II were the poet Jan Campert, the Hispanophile and novelist Dr. Johan Brouwer, the painter and essayist W. Arondéus, the narrator A. M. de Jong and the philosopher Prof. Leo Polak.

The German authorities did not at first interfere directly with literary life, although many works of Jewish and leftist writers were banned. Among the most remarkable publications of the early years of World War II were: Van Schendel's *Eeuspel der Natuur* (1942), Vestdijk's *Rumeiland* (1940) and Theun de Vries's *Tegels van de*

Haard (1941). A collection of essays by the director of the Rijksmuseum, Dr. F. Schmidt Gegener, was published posthumously under the name "Phoenix." In verse, the collection Tusschenspelen by P. C. Boutens (1870–1943) and the clandestinely distributed In Memoriam Ter Braak et Du Perron by A. Roland Holst made a great impression. Anonymous political verses appeared almost immediately after the occupation. The formation of the Dutch "Kulturkammer" (April 1942) imposed upon every author the choice of submitting to the German measures or of being silent. There was a third choice: publication in secret. One of the leading figures among the resistance movement of the men of letters was Prof. N. A. Donkersloot.

Owing partly to the growing atrocities, the stream of so-called "Gueux" songs (Geuzenliederen) increased. To these secret publications, the work of a few dozen printers, some of whom paid for them with their lives, the Netherlands owed several hundred curious issues. The publishing house De Bezige Bij devoted the proceeds to help the illegal action. As practically all periodicals were suppressed, clandestine journals appeared out of which, after the liberation, new periodicals were formed.

The death of Ter Braak proved an irreparable loss to Dutch criticism; in the poetical field Gerrit Achterberg and Bertus Aafjes came to the fore during World War II and J. C. Bloem stood out among the older writers. In prose, the harvest was poor; with Arthur van Schendel (1874–1946) the only master novelist passed away. In spite of interesting work by A. Defresne, drama remained the weakest spot in Dutch literature. (G. Sc.)

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Dutra, Eurico Gaspar

Dutra (1885-), Brazilian statesman and army officer, was born May 18, 1885, in Cuiabá, Brazil. After a cursory education in primary and secondary schools he joined the army as a private in 1902. He attended the Brazilian Military school in Rio de Janeiro, 1904-08, completing his work as an officer candidate, and was commissioned as a 2nd lieutenant in 1910. In 1932 Dutra, who had become one of the leading members of the Brazilian officers' clique, helped put Getulio Vargas in the presidency by means of a coup d'état. Later, Dutra helped put down an anti-Vargas rebellion in São Paulo state and in 1936 the grateful Vargas appointed him minister of war. Although Dutra apparently was no confirmed believer in democracy and had shown authoritarian leanings, his sympathies were with the Allies in the war against the axis. After Brazil declared war against Germany and Italy in Aug. 1942 Dutra helped build up the Brazilian army, with the aid of U.S. equipment, into a sizable force. In Oct. 1945 when Vargas was forced to resign the presidency and call national elections, Dutra became his hand-picked candidate. Dutra defeated his opponents and was sworn in as president, Jan. 31, 1946, for a six-year term. In the summer of 1946 he ousted Communists from government offices and suspended a Communist newspaper that protested the action.

Dyestuffs

In 1937, the U.S. dyestuffs industry had attained a position of key importance in the nation's economy. Prior to World War I, the production of dyes in the United States had been insignificant. Practically all of the requirements were imported from Germany, and the

loss of foreign sources of supply placed colour-consuming industries in a precarious position. Early in 1915, steps were taken to establish a U.S. industry; the government provided the necessary tariff protection. Many patents which Germany had taken out in the United States and which had virtually prevented the establishment of a U.S. dye industry were seized and made available to U.S. manufacturers. These factors acted as a stimulus toward the creation of a self-contained industry, and progress thereafter was rapid. Despite the return of imports in the early 1920s, the expansion of domestic capacity resulted in their gradual displacement. The U.S. valuation method of tariff protection proved to be exceptionally effective in promoting the development of newer and more complex dyes. The 20-year period from 1917 to 1937 witnessed the further expansion of the U.S. industry even though foreign interests re-established themselves in the United States, both as producers and as selling agents for imported dyes. Table I illustrates the supply position of the United States in 2 representative peace and war years:

Table I.—Coal-Tar Colours, Dyes and Stains*
(Quantity in thousands of pounds, value in thousands of dollars)

	Qua	ntity	Value		
İtem	1937	1944	1937	1944	
Production	122,245	151,651			
Sales of U.S. dyes, including exports	118,046	150,049	64,613	110,748	
Imports	3,381	629	5,201	1,653	
Exports	16,728	19,562	6,251	16,038	
Apparent consumption Ratio (per cent) of:	104,699	131,116	63,563	96,363	
Imports to apparent con-					
sumption	3.2	0.5	8.2	1.7	
Exports to total sales of do- mestic dyes	14.2	13.0	9.7	14.5	

Production of dyes in the United States followed a steady upward trend during the two interwar decades and reached a peak in 1941 of 168,595,000 lb., exceeding the previous year's output by more than 30%. This expansion was primarily due to the demands for textiles from the rapidly increasing military forces. The industry continued to supply an active civilian market both for current consumption and stock piling in anticipation of probable entrance into the war. The utilization of vat colours became more widespread, and the quality and fastness of the dyed materials were better than ever before. In 1939, U.S. manufacturers supplied more than 95% by weight of U.S. apparent consumption. Following the outbreak of hostilities in Europe and the subsequent disruption of overseas communications, U.S. production greatly expanded. In 1940, manufacturers supplied almost 98% of the quantity consumed in the United States which rose to 99.5% in 1943 and 1944. The indispensability of an integrated chemical industry to the welfare and security of the United States was particularly significant.

Facilities for the manufacture of dyes were substantially expanded in connection with the war program. More than \$2,500,000 went into the building and processing equipment needed for the increased production of military vat dyes. Many organic chemicals and intermediates normally required in dyestuff synthesis were utilized in the defense program for the manufacture of explosives, aviation gasoline, pharmaceuticals, refrigerants and synthetic rubber.

Conservation of raw and finished materials was the industrial keynote for 1942. The national emergency brought about many drastic and sudden changes. Government consumption of certain vat colours used for olive drab and khaki shades had increased abnormally long before U.S. entrance into World War II. A growing demand for civilian goods coloured with fast dyes manifested itself. The dyestuff industry stepped up production on the vital war colours. With the military program developing rapidly,

it became evident that the production of these particular anthraquinone vat colours would be insufficient to fill all the requirements of the government. This brought about the War Production board's conservation order M-103, effective April 1, 1942. It restricted the sale of nine anthraquinone vat dyes exclusively for military purposes and assured mills holding government contracts of a sufficient supply of vat colours. Quarterly civilian quotas on anthraquinone vat dyes not restricted for military use were also established, and the use of dyes, other than vat, for non-military purposes was reduced to 60% of the quantity consumed in 1941. The lowered output of dyes was due to the government curtailment in the supply of cotton textiles for civilian use and the scarcity of many basic raw materials needed for civilian dye production.

A similar situation existed in 1943 and 1944. Increased consumption of dyes for military use was offset by decreased civilian consumption, the total 1943 production being 5% less than that of 1942. The sale of certain vat colours continued to be restricted for military use only. Civilian requirements were allotted what was believed to be sufficient for civilian needs. It was the policy of the War Production board to make available dyes of high quality and performance in order to maintain the standards of civilian textiles as close as possible to the desirable properties of fabrics processed during peace.

World War II was also largely responsible for the development of new fibres and materials for specialized uses. Fibres were given numerous treatments such as shrinkproofing, resistance to creasing, water repellency, mildewproofing and flame-proofing. These entailed the use of waxes, resins and other chemicals and necessitated modifications in dyeing and finishing procedure. Through research carried out in dyestuff laboratories, new dyes were developed and processes devised that were capable of withstanding many of these treatments without deterioration of colour or fastness properties. Dyestuff manufacturers improved dyeing and application techniques as well. These made possible the continuous processing of delicate fabrics with minimum distortion, crushing or chemical deterioration, thus extending the application of vat colours to a wider variety of materials than before. Woolens, spun rayons and various combinations of animal, vegetable and synthetic fibres could be dyed with vat colours by a continuous method which minimized the variables and mechanical difficulties formerly restricting the use of these exceptionally fast colours.

During the first eight months of 1945, efforts were directed toward the production of adequate quantities of military dyes to satisfy government requirements. Many of the restricted vat colours had to be produced at a rate 200 times the normal prewar demand. It was also recognized that should the war end suddenly, sizable stocks of these colours would be on hand plus material in process. The surplus could not be avoided because of the time required in manufacturing a dye and the inability to change over, once the operation was under way.

That situation existed on Aug. 20, 1945, when conservation order M-103 was rescinded. While material was made available for reconversion and civilian use, results were not immediate, and the industry was left with the problem of disposing of heavy inventories of military colours. Their exceptional fastness made them particularly desirable for heavy-duty fabrics, and dyeing formulas for civilian shades were developed incorporating these colours.

Reconversion began soon after V-J day. Military-type dye inventories held by textile mills were taken over by the government and declared surplus property. Although

the dye industry had to make extensive shifts in the relative importance of different dyes produced, a return to the normal pattern presented comparatively few difficulties. The technical and mechanical changes involved were relatively simple, consisting largely of the realignment of equipment without large-scale replacements or alterations but required time. The colours most urgently needed were first put into production, and by the end of 1945 practically all groups of colours were again manufactured but not in sufficient quantities to fill the heavy demand for both domestic and export purposes. Total production of dyes in 1945 was 144,000,000 lb. compared with 152,000,-000 lb. in 1944. A substantial decline in the production of vat colours occurred, but this class continued to be the most important and accounted for 34% of the total production of dyes in 1945.

An active demand for all types of dyes was evident, but strikes in the steel and coal industries as well as the usual lag in production of dyes behind seasonal trends in the textile trades, prevented the dye industry from completing the expected major readjustments in 1946. The supply of many raw materials and intermediates was still insufficient to meet all requirements, but it was considered to be only a matter of time before most of these shortages could be overcome. A wider variety of colours would shortly become available, since many dyes were developed during the war which had previously been imported. The United States dye manufacturers were in a stronger competitive position than ever before; their efficiency had reached a high level, and new technical methods and processes had been developed.

Germany.—Before World War II, Germany was the principal source of dye imports into the United States and the most important competitor of the domestic industry in export trade. The German dye industry developed many new products, and the ability of Germany to wage a global war was largely due to its organic chemicals industry. In 1939, 155,000,000 lb. of dyes were produced, of which 50% were exported. Germany controlled plants in almost every dye-producing country in the world, including the United States. Much of the ground lost by German dye manufacturers during World War I had been regained and its position was strong. After Germany's defeat, the Allied Control council ordered the seizure of all plants and assets.

United Kingdom.—The pattern followed by the British dyestuff industry closely paralleled that of the United States. In 1913, the total production was only 9,000,000 lb., reaching a high of 63,000,000 lb. in 1937, then dropping off in 1938 to 45,500,000 lb., of which 9,000,000 lb. were exported. The industry was integrated and strengthened its equipment and manufacturing technique considerably during the war.

Switzerland.—Dye production amounted to 16,000,000 lb. in 1938 and 20,000,000 in 1939. Before World War II, Switzerland exported more than 90% of its entire output of dyes. The average unit value of Swiss exports of dyes was considerably higher than that of any other country.

Japan.—Prior to the war, Japan was the fifth largest dye-producing country in the world. Until 1931, development of the industry had been hindered by outside competition, but the desire of the government to increase its country's military potentialities led to heavy subsidies and effective protective duties. Sulphur colours were the most important group of colours manufactured during the 1930s, but large gains were also made in the production

Table II.—Production of Coal-Tar Colours, Dyes and Stains

					(tr	ı tl	hoi	usai	nds of pounds)		
	Ou	ntr	У						1937	1938	1939
Germany									164,500	135,000	155,000
United States									122,245	81 <i>,</i> 759	120,191
United Kingdom .									63,265	45,502	Not available
U.S.S.R									55,000	77,822	Not available
Japan									52,468	63.183	62,804
France									25,100	20,000	Not available
Italy*									27.548	23,541	31,277
Switzerland									17,370	16,170	20,470*

Source: U.S. Dept. of Commerce, from official statistics of individual nations.

of other groups of colours.

France.—In 1938, 20,000,000 lb. of dyes were produced, and exports amounted to 9,500,000 lb., consisting chiefly of the lower priced bulk colours. Principal customers were Germany, Belgium, the Netherlands, China and Czechoslovakia.

Italy.—Before the war, Italy had a substantial dye industry and exported appreciable quantities to countries other than the United States. In 1939, 31,000,000 lb. of dyes were manufactured, of which 43% were represented by sulphur colours. Important markets were Germany, Balkan states and the far east. Production apparently diminished after 1939 owing to difficulties in obtaining raw materials. (See also CHEMISTRY.) (A. G. BR.)

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Dykstra, Clarence Addison

Dykstra (1883–), U.S. educator, was born Feb. 25, 1883, at Cleveland, O. He studied at the University of Iowa, graduating with a B.A. degree in 1903. In the early 1900s he taught at several U.S. universities and was chairman of the department of political science at the University of Kansas; he was associated with that institution from 1909-18. He then abandoned his academic career temporarily to become executive secretary of the Cleveland, O., Civic league and held similar offices at Chicago and Los Angeles. For seven years (1923-30) he taught at the University of California and in 1930 he was selected city manager of Cincinnati, a post he retained until 1937, when he was named successor to Glenn Frank as president of the University of Wisconsin. On Oct. 12, 1940, Dykstra accepted the post of director of selective service after the university granted him leave of absence. He held this post until April 1941. Concurrently, he held other positions connected with the government service and was chairman of the National Desense Mediation board until June 1941. He resigned as president of the University of Wisconsin on Oct. 28, 1944, to become provost of the University of California, at Los Angeles.

EAC

See European Advisory Commission.

Eaker, Ira C.

Eaker (1896-), U.S. army air officer, was born April 13, 1896, in Field Creek, Tex. He studied at the University of the Philippines, Columbia and Southern California universities, and was commissioned as second lieutenant in the infantry reserve in 1917. In 1929 he was co-pilot in an army plane which established an endurance flight record of 150 hr. and 40 min., and some years later he made a cross-continent "blind flight." In

Jan. 1942 he was made brigadier general. He was appointed chief of the U.S. bomber command in the European theatre of operations in the summer of 1942, and on Feb. 15, 1943, having been advanced to the rank of major general, became commander of the 8th U.S. air force, succeeding Maj. Gen. Carl Spaatz. Promoted to lieutenant general in Oct. 1943, he was appointed, on Dec. 28, commander of all Allied air units in the Mediterranean theatre. On April 24, Eaker was named deputy commander of the army air forces and chief of the air staff.

Ear, Nose and Throat, Diseases of

The decade 1937-46 was replete with improvements in the surgical treatment of deafness, and inspirational advances in the research and study of the physiology of the nose and ear were made.

Julius Lempert's fenestration or window operation in the surgical treatment of deafness caused by otosclerosis was outstanding. His record of 1,000 patients with 57% completely rehabilitated by restoration of hearing and an additional 9% partially rehabilitated was impressive.

The use of the cartilaginous stopple in the fenestrum was not taken up with complete enthusiasm by all otological surgeons. Edward Campbell of Philadelphia gave a fine résumé of surgical progress in the treatment of deafness and felt that Lempert's operation offered the only real solution to otosclerosis deafness.

Lempert created a mobile window in the membranous and extracartilaginous portion of the external auditory canal which gave him an approach to any part of the temporal bone. It is technically called the endaural, antauricular approach to the temporal bone. With this approach he was able to perfect a new technique for the alleviation of deafness caused by otosclerosis. He finally accomplished a one stage endaural plastic reconstruction, incorporating the following principles: (1) the decompression and mobilization of the fluid beneath the bony capsule (the perilymph) by constructing surgically a troughshaped fenestrum ("window") in the bony capsule of the external semicircular canal at first, and later changed to the vestibule in a newer technique; (2) replacing the removed area of bone with a cartilaginous stopple; (3) and arresting the progressive stasis by decompression of the dura of the temporal lobe in the region of the epitympanic

Deafness in Children.—A great interest arose in the hearing defects of children. Most large cities such as New York, Philadelphia and Baltimore continued to make routine audiometric studies on all school children in the lower grades.

Remarkable work on this subject was done by S. J. Crowe and John W. Baylor of Baltimore in 1939. They observed that long-continued partial obstruction of the eustachian tubes in children caused retraction of the ear drums, impaired hearing for high tones, with relatively good hearing for low tones, and sometimes caused a total loss of hearing by bone conduction. Detailed observations were made of 60 children, in some cases for 10 years. The most satisfactory method of treatment was irradiation with radium or Roentgen rays. After the hyperplastic lymphoid tissue had been reduced and the tubal orifices looked normal, the hearing for high tones and for boneconducted sounds often returned to normal. The authors concluded that the most common type of middle ear deafness in adults begins during childhood. If school children in the primary grades were examined at least once a year with a nasopharyngoscope, and those with hyperplastic

lymphoid tissue in and around the orifice of the eustachian tube were treated with radiation as often as necessary to insure normal functioning of tubes, the authors believed the number of deaf adults in the succeeding generation could be reduced by 50%.

Aero-otitis Media.—Inflammation of the middle ear, either catarrhal or suppurative in type, came up as a distinct problem among flying personnel during World War II. If treated at once, simple conservative measures effected a cure; if allowed to proceed, pus formed in the middle ear and required surgery. Prevention was the keynote. Fliers should not go aloft if there is any evidence of acute rhinitis or acute sinusitis. Rapid descent appeared to be more important in causation than ascent; also, if the mouth were kept open or swallowing was practiced, the number of cases could be reduced. Proper ventilation of the middle ear by way of the eustachian tube was imperative for prevention and treatment.

Acoustic Trauma and Deafness.—World War II was instrumental in causing loss of hearing in many thousands of young men. Walter Hughson estimated the number at 250,000, including losses from slight to profound. Sudden loud explosions, as of high calibre artillery, caused more scrious damage to the inner ear than did the lower-pitched noises of rifle or machine gun fire. Major Borkis of the British army recorded that most cases of nerve deafness persisting for six months after blast injury to the ear did not improve. Sulfonamides were used to clear up infection resulting from ruptured drums, the average stay in the hospital being 14 days.

Tympanosympathectomy.—A new operation was devised by Julius Lempert for the relief of patients suffering from chronically persistent tinnitus aurium (noise in the ear). Fifteen patients were operated upon and ten were cured. The operation was based on the theory that the ganglion cells in certain cases are either acutely or chronically inflamed. Hence, with the removal of these cells in the tympanic plexus of nerves a cure should result in those cases in which ganglionitis is a causative factor. The operation in brief consisted of (1) widening the outer membranous third of the auditory canal to permit as wide a speculum as possible; (2) disengaging the lower half of the drum; (3) everting the disengaged half to expose the tympanic plexus; (4) excision of the tympanic plexus; and (5) replacing the disengaged portion of drum into its normal position.

The cases had to be carefully selected and carefully operated upon, and there was no guarantee that all would be cured.

Nose.—A great deal of work was done on the physiology of nasal secretions. Although the aetiology was still obscure, new and important facts concerning the secretions in the nose came to light—secretions in health and disease. Normally the nose was found to be slightly acid, pH between 5.5 and 6.6 as compared with neutral 7, pH standing for hydrogen ion concentration. During acute cold and during intense emotion the secretions became alkaline.

Hence, treatment to be of benefit should be such as to return the nose to its normal or acid condition. Vasoconstrictors were no longer recommended promiscuously. Secondary dilatation became so well known that only the mildest of vasoconstrictors were used as a temporary stopgap until aetiology could be determined and more effective therapy instituted.

Nasal plastic surgery or rhinoplasty had become a real art, combining itself with physiologic concepts so that people might breathe better and look better at the same time. Good results were further enhanced by the use of penicillin and sulfonamides to prevent complications. The one-stage operation for correction of internal and external deformities of the nose came to be considered good surgery, saving time, expense and unnecessary hospitalization.

Arthur W. Proetz, clinical professor at Washington university, St. Louis, Mo., in his book Applied Physiology of the Nose, definitely brought together concepts on how the nose functions, developed up to 1941. The importance of ciliary action, of a protective mucous blanket, of submucous phagocytic and wandering cells, of lysozyme and of conservative surgery were all stressed in minute and convincing detail, based on experimental and clinical evidence.

Sinuses.—Aero-haematoma was discussed as a new entity: blood in a sinus encountered among fliers caused by sudden high ascents or obstructive aerosinusitis. Twelve cases were encountered over a period of two years, by R. Wesley Wright and Harold M. E. Boyd. These cases were treated successfully by conservative measures, shrinking packs in the nose and occasionally sinus lavage. The outstanding symptom was pain, coming on during actual or simulated flight. Other symptoms were soreness over the sinus areas, numbness of the face and teeth, discharge of fresh or old blood from the nose and occasional dizziness. With the advent of increased flying this new condition was kept in mind with its diagnosis and simple therapy.

Allergy in the Ear, Nose and Throat.—Joseph E. Sternberg warned against the abuse of vasoconstrictors in hay fever and vasomotor rhinitis. Nasal obstruction persisted in several cases in spite of continued use of vasoconstrictors, but the condition cleared up within five days of nontreatment. His belief was that vasoconstrictors should be used as a spray only, and not more than once or twice in 24 hours.

Benadryl, a new antihistamine drug, was found to be of value in allergic conditions, angioneurotic oedema and similar complexes. Histamine was indicted as the probable injurious agent and research work was done to produce this anti-histamine drug.

Benadryl was given to 72 patients whose complaints embraced vasomotor rhinitis, definite perennial allergic rhinitis and nasal allergy associated with asthma. Marked improvement or complete relief from nasal congestion and its associated symptoms occurred in 50% of the group with vasomotor rhinitis and in 42% of the group with perennial allergic rhinitis. Only four of the eight patients with associated asthma were definitely improved.

Benadryl and pyribenzamine were not the answer to a physician's prayer for a solution to allergic problems, but they did permit him to alleviate symptoms while he studied the patient for actual cause.

Penicillin in Otolaryngology.—Lt. Col. Gilbert C. Struble reported on the successful use of penicillin in otolaryngologic conditions in army personnel. Detailed, convincing descriptions of symptoms and therapy were outlined, and included such cases as acute and chronic empyema of the antrum, acute and chronic suppurative otitis media, superficial and deep cellulitis of the neck, etc., with the following general conclusions. Although penicillin is of great value in many diseases of the ear, nose and throat, it should not be relied upon to prevent impending intracranial complications of aural or sinal origin. Penicillin should be given directly into the spinal fluid if brain or meninges are involved. Also, it can be combined with sulfonamide therapy successfully, one appearing to en-

hance the effect of the other. Penicillin, like sulfonamide compounds, can give an effect masking the presence of disease unless the attending physician is alert to this possibility. Above all, the general principles and indications for surgical drainage remained unchanged during the decade 1937–46.

Larynx.—Much progress was made in the treatment of cancer of the larynx. If it is at all operable, most outstanding surgeons feel that laryngofissure or laryngectomy is the method of choice. Max Cutler of Chicago treated 118 unselected cases of laryngeal cancer by X-ray alone and obtained 42% five-year cures, and 39% three-year cures. Concentration radiotherapy resulted in the curing of certain forms of cancer of the larynx formerly regarded as incurable.

In general, Cutler felt that laryngectomy should be limited to intrinsic lesions with complete fixation of the vocal cords occurring in good surgical subjects of good life expectancy.

The study of laryngeal function, both in health and disease, received quite an impetus with the improvement in colour photography of the larynx. Louis H. Clerf of Jefferson Medical college, Philadelphia, contributed a historical and modern outline of laryngeal photography in 1941. He presented his own contribution of a photographic unit embodying the principle of the Garel camera. This simple apparatus for photographing the larynx by mirror laryngoscopy could be readily employed, because it required no additional personnel to operate and gave uniformly good results in a majority of patients whose larynges could be visualized by mirror laryngoscopy.

Gabriel Tucker of the University of Pennsylvania repeatedly emphasized the value in teaching of rapid colour motion picture films of the larynx, because it represents the living larynx exactly as it appears in the body and without distortion.

Ménière's Symptom Complex.—A complex characterized by deafness, tinnitus and vertigo received a new type of therapy from H. I. Lillie, B. T. Horton and W. C. Thornell.

There were 25 cases, 18 men and 7 women; the drug used was histamine, 2.75 mgms. in 250 c.c. of isotonic salt solution, and was given intravenously slowly. It was given daily for three to six days, then subcutaneous injections were given and gradually tapered off according to the response to treatment. Audiometric studies were made before and after treatment; 12 of the 25 patients showed improvement of hearing, in 6 improvement was noticeable, in 3 moderate, in 3 slight; tinnitus was improved in 14 patients and 21 noted improvement in vertigo. It was concluded that many persons with Ménière's symptom complex were improved in their hearing, tinnitus and vertigo with this new type of therapy. (See also Infantile

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(G. M. C.; G. E. L.)

Earhart, Amelia

Miss Earhart (Mrs. George P. Putnam) (1898–1937), U.S. aviatrix, was lost in the Pacific ocean during a round-the-world flight starting from Miami on June 1, 1937. Despite an extensive search by the army and navy, no trace was found of the flyer or her plane. Born July 24, 1898, she had successively been a nurse in Canada during World War I, a research worker, social worker, flyer, editor and lecturer. She established the following aviation records—first woman to fly the Atlantic, to fly in an Autogiro, to cross the United States in an Autogiro, to fly non-stop across the United States and to fly from Hawaii to the United States. In 1931, she had married the publisher, George Palmer Putnam.

Earthquakes

See DISASTERS; SEISMOLOGY.

Earths, Rare

See CHEMISTRY.

East Africa, British

See BRITISH EAST AFRICA.

Eastern Churches

The Greek Orthodox Church is a group of 11 churches comprising 140,000,000 members, united to each other by the same faith and governed by shepherds who go back successively as far as the apostles.

As a result of the Balkan Wars and World War I, the oecumenical patriarchate of Constantinople had lost most of its dioceses. Confined in Constantinople under the oppressive measures of the Turkish government, it struggled hard to keep its oecumenical prestige in regard to the other orthodox churches and the Christian churches. In 1944 the Bulgarian church, which had been in schism since 1872, asked and obtained from the oecumenical patriarchate its independence and autocephaly, a fact which contributed much to the pre-eminence of the patriarchate of Constantinople as the head of all the Orthodox churches. It succeeded even during World War II in keeping its friendly relations with the churches of the west and participating in the various conferences on faith, life and work. Its relations, especially with the Anglican church, attained such a degree of intimacy as to be called "brotherly."

The patriarchate of Alexandria paid much attention to its internal reorganization and extension towards Central and South Africa, as well as to the education of its clergy according to the modern problems with which it had to deal. The patriarchate of Antioch, free from many of the trials of war, but living in a country where many denominations

continued to struggle for supremacy, was fighting to keep its place. The training of the clergy met with many difficulties owing to scarcity of means. The patriarchate of Jerusalem, being the custodian of the holy places on behalf of the Orthodox Church in Palestine, had to fight hard against the contending parties in the new attempts to deprive it of the superiority it possessed in the administration of the holy places from the very beginning. The church of Cyprus, which in 1934 lost its archbishop and one of its metropolitans, up to 1946 had not achieved the election of a new archbishop.

The most important change took place in the great Orthodox Church of Russia. Because of the attitude taken after the revolution of 1917 towards religion generally and the Orthodox Church in Russia in particular, persecution by word and deed continued throughout the first ten years until the *locum tenens* of the patriarchal throne decided to recognize the new regime. Even after that recognition the persecution did not cease, but was confined to the spiritual means of atheistic propaganda. The first mitigation of persecution appeared after the publication of the Constitution of Stalin (1937) when religion was conditionally recognized and permitted. The teaching of religion in the schools continued to be forbidden; neither were parents allowed to look after the religious education of their children.

A sudden change in the conduct of the soviet government was noted after the German invasion of Russia. During the war years the Russian clergy with the *locum tenens*,

Alexei, patriarch of the Russian Orthodox Church (left), shown with Stephan I, exarch of the Bulgarian Church, during Alexei's visit to Sofia, Bulgaria, in the summer of 1946

Sergius, exhorted the Russian faithful to fight for their country and collected among them 200,000,000 roubles for the needs of war. This devotion of the Russian church to the nation moved the government to allow the election of a new patriarch in Russia and to give him, with his holy synod, permission to proceed to the organization of the Orthodox Church in Russia, which had been lacking from the time of the revolution. After this grant of freedom, many churches, which during the revolution had been turned to secular uses, were given back to their formal object. Theological academies and seminaries started to function again in the U.S.S.R., and religious magazines and ecclesiastical books were again published; a new religious life developed. During the election and enthronement of the successor of Sergius, the Patriarch Alexei, the soviet government seized the opportunity to show to the world its new spirit of tolerance.

The Orthodox Church in the Balkans, especially the church of Greece, suffered very much owing to the vicissitudes of war. After the occupation of Greece by the Germans and the Italians and the invasion of northern Greece by the Bulgarians, many churches were destroyed and the clergy pitilessly persecuted; the theological faculty and the theological colleges ceased to function. After liberation, the church of Greece applied itself strenuously to its reconstruction, but progress was very slow owing to the total collapse of the finances of the state and the impoverishment of the people, who largely contributed to the economic existence and prosperity of the church. The other Orthodox churches of Rumania, Yugoslavia and Bulgaria,



owing to the new regime, had to accommodate themselves and restrict their religious life in many ways. Religious teaching was abolished in the schools, ecclesiastical property was in danger of being confiscated and the clergy was forbidden to enter into communication with the other Orthodox churches or with the western churches and denominations. The Orthodox Church of Poland, consisting chiefly of Ukrainians, was literally decimated after the reunion of the Ukraine with soviet Russia. Of the 4,000,-000 Orthodox members before the annexation, there remained some 200,000 with a metropolitan in residence in Warsaw and one bishop. The small Orthodox Church of Albania, although it succeeded in obtaining its autocephaly from the oecumenical patriarchate of Constantinople, could not be optimistic about its future owing to the pressure of the Moslem-soviet government of Albania.

Eastern Island

See Pacific Islands, U.S.

East Indies, Dutch

See NETHERLANDS INDIES.

Eastman, Joseph Bartlett

Eastman (1882-1944), U.S. government official, was born June 26, 1882, in Katonah, N.Y. He was graduated from Amherst college in 1904 and studied law at Boston university. He was appointed to the Interstate Commerce commission by President Wilson in 1919 and was reappointed by succeeding presidents until 1933, when he served as federal co-ordinator of transportation. During his 14-year tenure on the ICC, Eastman fought to lower freight rates and executive salaries. He denounced unnecessary duplication of transportation services and sought to outlaw dummy corporations and holding companies. In 1936 he returned to the ICC and in Dec. 1941 was appointed director of the Office of Defense Transportation (ODT). Under Eastman's direction, the U.S. railways functioned smoothly during World War II and there was no repetition of the breakdown of World War I. Eastman died in Washington, D.C., March 15, 1944.

East Prussia

Formerly the easternmost province of the German land of Prussia, East Prussia had an area of 14,283 sq.mi. and a pop. (1939) of 2,496,017. East Prussia was separated from the remainder of the German reich after World War I by the Polish province of Pomorze, generally known as the Polish Corridor. According to the official figures of the Prussian census of 1910 the population in the southern part of East Prussia showed a strong Slav admixture, and in some districts in the southeast even a Slav majority. In 1919 the Poles based their claims for East Prussia on these considerations of nationality, and also upon considerations of strategy. A plebiscite arranged by the peace conference in 1919 in the nationally mixed districts decided in favour of Germany. Yet the strategic considerations in favour of Poland retained their validity, as was clearly shown when the German armies advancing from East Prussia precipitated Poland's defeat in 1939 and made Poland's access to the Baltic sea militarily untenable. For these reasons Poland claimed East Prussia during World War II. An additional reason was the socio-political character of the land; East Prussia was regarded as the centre of the economic and political power of the militaristic Junker class. In the period of the German republic (1918-33) the Junkers succeeded in maintaining their former position and even in increasing their hold upon Germany after the election of Field Marshal Paul von Hindenburg as president of the reich.

At the Berlin conference in 1945, the United States, the soviet union and Britain decided that Koenigsberg, the capital of East Prussia and an important port, and all the territory east and north of it were to be incorporated into the U.S.S.R., while the southern part of the province was put under Polish administration. The German inhabitants of East Prussia were to be transferred to Germany and to be replaced by Slav settlers. (H. Ko.)

Eberstadt, Ferdinand

Eberstadt (1890—), U.S. government official, banker and lawyer, was born June 19, 1890, in New York city. He graduated from Princeton in 1913 and took his law degree from Columbia university in 1917. He was associated with a Wall street investment house as a corporation lawyer and later was an investment banker until Jan. 1942, when he became chairman of the Army and Navy Munitions board. When this board was merged with the War Production board in September, Eberstadt was appointed vice-chairman of the latter, under Donald M. Nelson, in charge of synchronizing army and navy needs with production schedules. As the culmination of disputes within the board and between the army and the board, Eberstadt left in Feb. 1943.

Eclipses of the Sun and Moon

See ASTRONOMY.

Economic and Social Council

See United Nations.

Economic Association, American

See Societies and Associations.

Economic Defense Board

See WAR AND DEFENSE AGENCIES.

Economic Development, Committee for

See COMMITTEE FOR ECONOMIC DEVELOPMENT.

Economics

The decade 1937-46 saw important advances in both theoretical and empirical economics. In the field of value theory, the basic postulates of the neoclassical system were critically examined and revised in important respects. Likewise, much creative speculation took place in the field of business cycle theory. Finally, the period was notably fruitful in empirical economics, where important progress was made in the development of new statistical tools and measurements, and particularly in relating empirical investigation to theoretical analysis.

There continued through this period the re-examination of value theory, begun in the early '30s with the publication of the works of Edward Chamberlin, Joan Robinson and Heinrich von Stackelberg on monopolistic and imperfect competition. Theoretically, while many minor refinements of the theory appeared, only one development appeared of possible real significance for future value theory—the attempt by Robert Triffin to effect a synthesis of the Marshallian partial equilibrium tradition of the Anglo-Saxon countries with the Walrasian general equilibrium system dominant on the continent. This was done by taking the concept of the differentiation of the prod-

uct of firms to the point where each firm was looked upon as a separate "industry." By thus doing away with the concept of the industry as a group of competing firms, and instead placing all firms in competition with one another with greater or lesser competitive gaps between firms, it was possible conceptually to relate all firms into one overall system.

The development of the theory of monopolistic competition gave an improved frame of reference for studies of monopolistic elements in the national economy. This was particularly evident in the extensive investigation into monopoly conducted by the Temporary National Economic committee, as well as in a number of private studies.

Within the field of value theory one other development, while not new, assumed increased importance. This was the revival, particularly by J. R. Hicks, of the indifference curve analysis, first introduced by Francis Edgeworth and Vilfredo Pareto but never extensively used until the decade 1937–46. Its theoretical significance lay in the fact that it claimed to do away with any dependence upon the concept of the measurability of utility characteristic of the traditional value theory. Analytically its major use had been in the rehabilitation of welfare economics, where it resulted in a considerable revival of interest in the related field of index numbers, and in the analysis of factoral combinations and multiple-product operations.

Perhaps in reaction to the depression of the 1930s, a major share of the attention of both theoretical and empirical economists was claimed by problems related directly to business cycles. The problem of unemployment had become perhaps the major practical and theoretical problem, just as the theories of value and distribution were for the classical period.

* * *

A MAJOR INFLUENCE in giving this problem its central position had been the appearance in 1936 of J. M. Keynes's General Theory of Employment Interest and Money. Its major significance for economics lay in the fact that it presented a new system for analyzing movements in aggregate income and employment. Taking unemployment as its central problem, the General Theory set forth a more complete and realistic system for analyzing the level of effective demand and the reasons for its fluctuation. It showed in theoretical form the possibility of an economic system which was in temporary equilibrium at less than full employment.

While many of the individual points of the General Theory could be traced to other authors, the publication of the new system was an event of first-rate importance in the advance of economic thought. It acted as a tremendous stimulus to the creative activity not only of those sympathetic to the Keynesian ideas but also to anti-Keynesians.

In the theoretical ferment following the publication of the General Theory, much effort went into the attempt to put business cycle analysis into dynamic terms. One aspect was a rapid development of the theory of uncertainty and expectations in the explanation of the level of investment. Another was the use of time sequence and period analysis of the movements from one position to another. Mathematical economists in particular were concerned with dynamic business cycle analysis and made important contributions.

The General Theory and the theoretical systems based upon it were not accepted without criticism. Objections came primarily under two related headings. First, it was held that certain of the relationships postulated as stable by the Keynesians, particularly that wages are inflexible

downward and that there is a consistent relationship between consumption and income, were not borne out in fact. Secondly, it was urged that the aggregative Keynesian analysis did not include enough variables to give a true picture of business cycle processes.

One other major contribution to the theory of economic change appeared during the decade, that of J. A. Schumpeter. Conceptually Schumpeter's work represented a major advance. Instead of taking the business cycle as an area apart, he placed it at the centre of the entire capitalist process and, bringing to a focus all phases of economic analysis, revealed the cycle as a legitimate and necessary characteristic of capitalism.

Starting from a system of static equilibrium, Schumpeter explained the business cycle by introducing the entrepreneur, defined as a person who initiates new products, methods and industries, as the dynamic force which initiates successive waves of economic progress and growth, to be followed by a readjustment toward a new equilibrium as the dynamic factors gradually become exhausted.

Empirical economics was probably emphasized more during the decade 1937–46 than in any previous era. It was particularly characterized by efforts to relate statistical studies to theoretical analysis. Because of the increased interest both of private groups and of the government, large numbers of new statistical series became available.

Especially significant were two new series of data relating directly to problems of business cycle measurement. One was the new census bureau series on the labour force, on unemployment and on the distribution of labour and employment among major segments of the economy. The second highly important series were estimates of national income and related series, carried on by the department of commerce.

Earlier work in these two areas had been done primarily by private organizations, and the fact that the government took over in this period indicated the increased importance placed upon the problem of fluctuations in employment and output. In terms of progress of economic thought, these and other important quantitative measurements helped meet a long-felt need for adequate concrete data to fit into the theoretical concepts which economists had developed.

Moreover, not only had theoretical concepts helped to mould the form in which the statistics were collected, but as better opportunity was provided to test hypotheses by facts, empirical economics in turn did much to influence the development and improvement of theory. An important illustration was the tendency previously mentioned to try to break up purely aggregative analysis of the Keynesian type into its components.

A noteworthy example of the trend toward relating theoretical and empirical analysis was Wassily Leontief's continuing studies which attempted to place in the framework of the general equilibrium theory an empirical study of the interrelations within the parts of the economy as evidenced by concurrent variations in statistical measurements of price, production, investment and income. This type of analysis contributed much to an understanding of the real interrelationships in the economy, and might ultimately provide a scientific basis for prediction of economic trends. The growing concern of the public and the government with these problems was again illustrated by the fact that this work was now being carried on by the government.

The central position taken by the problems connected

with business cycles was shown by the preoccupation of public policy pronouncements, both by private individuals and institutions and by the government, with questions relating to full employment and high levels of national income. The pronouncements of economists in the field of public policy primarily reflected their concern with the problem of maintaining an adequate level of investment both in the short-run cyclical period and in the long-run secular trend.

All schools of thought apparently agreed upon the strategic importance of investment and the necessity for finding sufficient outlets to absorb the nation's savings. In terms of policies needed to achieve a high level of investment two opposing positions could be distinguished.

One major point of view was that of the so-called stagnationist school. They foresaw a long-run lack of investment outlets in the private sector of the economy caused by factors not subject to control by methods suitable to a democratic capitalistic economy. These included such points as the decline of the rate of increase in population, the disappearance of the extensive frontier, a tendency toward capital saving investment, internal financing by industry and the possibility that saving would prove to be larger than intended investment. Moreover, because of this long-run lack of investment outlets, it was expected that short-term cyclical fluctuations in employment and income would be more severe, with relatively short periods of high activity and long periods of decline.

Suggested remedies varied widely. However, it may be said that all tended to place major reliance on an increased expenditure by the government, particularly government investment, to take up the slack expected in investment in the private sector. Concomitantly they tended to emphasize both the productivity of public investment and the lack of burden of the public debt. This latter position, which aroused much controversy, was supported first on the basis that the interest on internally held public debt amounted merely to a transfer of incomes and did not therefore involve a burden on balance.

Secondly, it was held that because of the expected tendency of national income to rise, partly because of government investment, any burden from the increasing interest charge would be lessened, depending upon the relative rates of increase.

The opposing groups denied the validity of the reasons advanced by the stagnationists, on the basis that such trends had been in existence during previous periods of high investment, or that the stagnationists had misinterpreted their data. The oppositionists tended to feel that any tendency toward long-run stagnation was due to institutional factors within human control. They cited the possibility of altering arrangements in such fields as monetary policy, the control of monopoly, tax reform and international trade and investment. Therefore, their policy recommendations were concerned with removing or alleviating institutional obstacles to high rates of investment

Two major areas of reform could be taken as typical of the manner in which these groups wished to improve investment outlets. One was by a reform of the tax system in a direction which the proponents felt would make a more favourable milieu for investment. All of these schemes had in common the desire to lighten the load of taxation upon investment return so that prospective profit might appear higher to the investor. Details of the schemes tended to vary, depending upon what factors in

the tax structure were believed most oppressive to investment. Generally, however, such schemes included heavier rates of personal taxation at low income levels coupled with the elimination of most excise taxes except those for sumptuary purposes; lower rates on high income levels; reduction of the corporation income tax rate; and a method of combining the corporation income tax and the personal income tax so that double taxation of dividend income would be eliminated.

The other example occurred in the field of international trade and investment. It was felt that enormous potential outlets for the sale of commodities and for investment existed abroad, but that under existing institutional arrangements the potentials were not likely to be realized. Policy recommendations were directed primarily toward such problems as stabilizing and freeing exchanges, encouraging capital movements on an economic basis, reducing government barriers to trade, controlling international cartels, and finding satisfactory methods of carrying on trade between free and controlled economies.

It was too early to tell at the end of the decade whether the war had any appreciable permanent effect upon the progress and direction of economic thought. It brought forth much discussion of such problems as price control, rationing and inflation. Likewise, much consideration was given to the form postwar problems might take, and to methods of alleviating expected maladjustments. However, the procedures used in analyzing these problems grew directly out of prewar modes of thought. The major influence apparently was in changing the areas of application and emphasis without causing any immediate direct break in the direction of economic thought.

This is not to say, however, that the large experience gained by economists and others with various economic processes, coupled with the enormous amount of empirical material gathered in the course of the war, might not have very important effects on the future progress of economic thinking.

It was probable that the war had accelerated to an even greater degree than in the past the tendency to link empirical and theoretical work with mutual advantage to the progress of each and to the progress of economics as a whole.

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(EU. C.; F. E. C.)

Economic Stabilization, Office of

See WAR AND DEFENSE AGENCIES.

Economic Warfare, Office of

See WAR AND DEFENSE AGENCIES.

Ecuador

Ecuador is a west-coast republic of South America, astride the equator, from which it is named. It is bounded on the north by Colombia, on the east and south by Peru and on the west by the Pacific ocean. Area: 104,510 sq.mi. (including the Galápagos Islands, or Archipiélago de Colón, a dependency in the Pacific, with an area of 3,029 sq.mi.). Pop. (1944 est.), 3,171,367. No national census had ever been taken; earlier pop. ests. were: 1941, 3,011,062;



Four homeless Ecuadorian children victimized by the earthquake that brought death and destruction to inhabitants of the area southeast of Quito during Aug. 1938

1942, 3,085,871. Racial distribution is estimated at 60% or more pure Indian, 25 to 30% mestizo and at most 15% white; there are a few Negroes on the coast. Density of population for the whole country by a 1944 official estimate was 30.35 per sq.mi. The capital is Quito (pop., 1944 est., 165,924); other important cities, with 1944 pop. ests.: Guayaquil, the principal port (172,948); Cuenca (52,519); Riobamba (27,459); Jipijapa (22,097); Vinces (21,860); Chone (21,834); Ambato (21,692); Loja (20,776) and Latacunga (20,357). Presidents during the decade 1937-46 included Federico Páez, 1935-Oct. 24, 1937; Alberto Enríquez, Oct. 24, 1937-Aug. 10, 1938; Manuel María Borrero, Aug. 10, 1938-Dec. 1, 1938; Aurelio Mosquera Narváez, Dec. 2, 1938-Nov. 17, 1939; Carlos Arroyo del Río, Nov. 17, 1939-Dec. 11, 1939; Andrés Córdova, Dec. 11, 1939-Sept. 1, 1940; Carlos Arroyo del Río, Sept. 1, 1940-May 28, 1944; José María Velasco Ibarra, after May 28, 1944.

Disorder by Tradition.-Ecuadorian development during the decade was a continuation of the country's history of almost chronic disorder. Ecuador had attempted an extensive program of reforms under the government of a junta headed by Federico Páez which came into power in 1935. The budget for 1937 was the largest in many years, with heavy expenditures for national defense, public education, and public works and communications. The government made especial efforts to advertise the country and to attract tourists. A constituent assembly met on Aug. 10, 1937, to consider needed amendments to the constitution of 1906. This assembly formally named Páez as provisional president of the country and began consideration of constitutional changes. The government in the meantime sternly suppressed adverse criticism, closed opposition newspapers and refused to allow political exiles to return to the country. As internal unrest continued, Pres. Páez was compelled to resign on Oct. 24; he was succeeded by War Minister Alberto Enríquez. Pres. Enríquez promptly dissolved the constituent assembly and announced a formal investigation of governmental affairs and a proposed purge of those who had "abused power."

Political instability continued throughout 1938. A new constituent assembly met on Aug. 10 and accepted the resignation of Provisional Pres. Enriquez. The assembly chose as his successor Dr. Manuel María Borrero, but he proved unable to restore order and resigned amid political turmoil on Dec. 1. On the following day the assembly chose Dr. Aurelio Mosquera Narváez as constitutional president under a new constitution which it had approved a few hours before. Pres. Mosquera, however, was quickly thrown into conflict with the assembly in a dispute revolving around former Pres. Luis Larrea Alba, and on Dec. 14 he dissolved the assembly by force and called new elections. A part of the army led by Larrea thereupon attempted to overthrow the government of Mosquera, but the revolt was crushed after two days of fighting.

A major factor behind the political unrest, accentuated by the fact that no one political leader could command general support from the country, was popular dissatisfaction over the lack of progress toward settlement of the acute boundary dispute with Peru. This controversy, involving more than 100,000 sq.mi. of territory in the Oriente, or undeveloped provinces east of the Andes, was a long-lived quarrel but had become more serious. Negotiations with Peru had reached an impasse by June 1938, and as frequent minor clashes in the disputed areas continued, Ecuador on Oct. 10 appealed for mediation to the American republics which, in a three-year conference at Buenos Aires, had just effected a settlement in the historic Chaco boundary controversy between Paraguay and Bolivia; nothing came of the appeal, however. Because of strained relations with Peru, Ecuador at first indicated refusal to attend the eighth Pan-American conference at Lima, Peru, in Dec. 1938, but finally agreed to participate.

The constituent assembly enacted several laws during

1938 aimed at the betterment of the Indian population and its protection from exploitation, and at encouragement of co-operative farming. Nationalistic legislation directed against foreigners, and the somewhat idealistic laws for the protection of labour, caused serious disputes with foreign corporations during the year.

The government in Jan. and in March 1939 suppressed minor disturbances accompanied by strikes, which it attributed to leftist elements. Arrest of several prominent political and military figures in July thwarted a rumoured revolution. Moderate tension continued throughout the year. In the meantime, congressional elections were held on Jan. 15 under the constitution adopted the preceding month. Women voted in them for the first time in Ecuadorian history. The new congress met Feb. 2 and confirmed Dr. Mosquera Narváez in the presidency. Great indignation was prevalent throughout Ecuador in March 1939 when it was proposed in the U.S. congress that that country should purchase or lease the Galápagos Islands from Ecuador for use as a Pacific defense base for the Panama canal and to prevent their seizure by any foreign power. The Ecuadorian government in May formally and absolutely disavowed the proposal. Ecuador declared her neutrality when war broke out in Europe on Sept. 1, 1939, and, on Oct. 20, in accordance with the Declaration of Panama adopted at the first inter-American foreign ministers' conference for the creation of a safety belt around the hemisphere, the government proclaimed the neutrality of a zone extending 500 mi. west from its coasts and including the Galápagos archipelago. War conditions quickly resulted in serious economic disturbance in Ecuador, manifested chiefly by a sharp rise in retail prices, from 10% to 20%, and a decline in agricultural prices. Pres. Mosquera died on Nov. 17, 1939, and was succeeded as provisional president by Dr. Carlos Arroyo del Río, president of the senate. Arroyo del Río resigned on Dec. 11, however, to enter the electoral campaign for a succeeding term as constitutional president.

Arroyo was elected president on Jan. 11, 1940, in a warmly contested campaign in which the result was little in doubt, however, because of administration support of Arroyo. Partisans of Dr. José María Velasco Ibarra, a former president and an independent candidate in the campaign, refused to accept the official election verdict, and on Jan. 12 attempted a coup d'état, but Provisional Pres. Andrés Córdova was able to suppress the movement within a few hours. The government soon afterward expelled Velasco to Colombia. Further revolutionary plots occurred later in January, in March, and in July but were relatively easily suppressed by the government and Arroyo was enabled to take office on Sept. 1, 1940.

Moves Against Axis.-Ecuador strongly supported the program proposed and adopted at the second foreign ministers' conference at Havana, Cuba, in July 1940 for the provisional administration of European possessions in the New World in the event that another power (Germany) should attempt to assume possession or control of them. Totalitarian propaganda and fifth-column activities had become so considerable in Ecuador by mid-1940 that the government in June began a formal investigation. It subsequently eliminated two focal points of axis propaganda, an Italian military mission, which was replaced by one from the U.S., and the economically unprofitable Germancontrolled S.E.D.T.A. air line. German employees were ousted from the latter, with support by the U.S. state department, and supplanted with Ecuadorian and U.S. personnel. Popular protests over the presence of several

Japanese "oil explorers" near Esmeraldas, a coastal port in northern Ecuador, led the government to expel them in June. Initiative in the movement to eliminate propagandists and fifth-column activities was taken by a senate committee headed by Sen. Filemón Borja.

Border incidents in 1941 led to a Peruvian invasion of southern Ecuadorian provinces in mid-year; withdrawal was accomplished only after some international pressure and much alleged destruction of property by Peruvian forces. The development greatly embittered the feelings between the two countries. Political disorders were frequent during the year and were intensified by the boundary dispute; many observers telt that only divisions among his opponents permitted Pres. Arroyo del Río to remain in power through the year. The delicate political balance prevented acceptance of a proposed border agreement with Peru or the conclusion of any agreement with the United States for construction of a naval or air base on the strategic Galápagos Islands, lest the domestic opposition be given political ammunition. The situation played into the hands, of course, of pro-axis propagandists, who were very active throughout the year. A German diplomatic attaché was expelled for abuse of his prerogatives. After soviet entry into the war in mid-year, nazi agents became active in propaganda work among conservative, strongly Roman Catholic elements. Feeling against Japan was very strong, however, especially after the rumour became widespread that Japan was extending military aid to Peru, where a large Japanese minority was located. After formal entry by the United States into World War II, Ecuador granted that country rights of a nonbelligerent and interned a number of Japanese nationals.

Ecuador had an especial interest in the third foreign ministers' conference, held at Rio de Janeiro in Jan. 1942, because of the opportunity thus presented for settlement of its boundary controversy with Peru. Ecuador threatened a partial disruption of the conference by refusing to participate until the question was admitted to the agenda. Peru finally consented to this action and throughout the sessions of the conference, although the boundary controversy had no official place on the program, leading delegates, including Sumner Welles of the United States, attempted to find a solution of the dispute. It was finally announced, just before adjournment of the conference, that the long-standing quarrel had been settled and the boundary marked out in general. Ecuador lost a major part of the Amazonian Oriente which it had previously claimed, but it was territory settled primarily by Peruvians. With technical assistance from the United States, Brazil and other interested American republics, a joint boundary commission began work in mid-1942 on the actual surveying of the line on the ground; this work was incomplete at the end of 1946. Opponents of the administration made much political capital of the popular dissatisfaction with the settlement, and in May 1942 a threatened revolt led to the arrest of several of the most disaffected In spite of the delicate political balance, Pres. Arroyo del Río led his administration in a policy of wholehearted collaboration with the United States in the war effort. The rubber crop was assigned to the United States by treaty in July and in September the government leased to that nation air and naval base sites on both the mainland and the Galápagos Islands. Pres. Arroyo del Río visited Washington, D.C., in Nov. 1942 and subsequently announced the creation of an Ecuadorian Development corporation, which, with a capital of \$10,000,000 loaned by the United States, would develop Ecuadorian agricultural and industrial resources; the corporation was designed as an affiliate

of the Inter-American Development commission.

Ecuadorian co-operation in the inter-American war effort continued without substantial change in 1943. The government on March 26 prohibited subsequent publication of news on hemisphere defense or local military developments. All communication with axis countries was ended in May, and property of axis nationals was taken over by the government. The executive placed all vessels of more than 20 tons under national control. The government concluded arrangements on Feb. 23 by which the United States was to buy all Ecuadorian quinine available for export. The United States in June extended a \$5,000,000 stabilization fund agreement for an added year. Extraordinary powers which the congress had earlier granted to the president because of world conditions were in November continued in force until Aug. 1944. The government in the same month prohibited exports of platinum.

Internal politics during the year was marked by preparations for the 1944 presidential election. At least six candidates were reported in the field as early as May 1943, one of them being former Pres. Velasco Ibarra, who had been in exile much of the time in previous years. Several Liberal party candidates for the congress were arrested in February on a charge of political conspiracy. The government easily suppressed a minor revolt in August. Conditions in the economic field generally improved through the year, although a flour shortage occurred in May. The cost of living continued to increase, and was estimated in 1943 to be more than 50% higher than in 1939. Price control proved, on the whole, ineffective. The United States promised late in May, after the visit of Vice-President Henry Wallace, to send urgently needed locomotives and other railway equipment, and, in conjunction with United States experts, a comprehensive social and sanitary improvement program was outlined. The United States expended considerable amounts on defense construction at Salinas, at the tip of the peninsula between the Guayas river and the ocean, and in the Galápagos Islands; this resulted in a temporary increase in employment. The available labour supply was further absorbed by added demands for balsa and rubber, in addition to the usual agricultural employment. Several, but not all, important subsistence and export crops were estimated to be in larger supply than in the previous year, although with regard to exports the lack of shipping continued to be a handicap. The government on Oct. 6 established a national bank of provincial development, with a capital of 100,000,000 sucres, for the purpose of furthering the agricultural program and other projects.

May Revolution.—The climax of developments in 1944 was the revolution late in May, shortly before the scheduled presidential elections, followed by the new government's consolidation of its position. The presidential campaign, which had begun even before the middle of 1943, revolved around the effort of the administration party (the Liberal Radical) to continue in power. That party on Feb. 16, 1944, nominated Miguel Angel Albornoz, 70-year-old president of the senate, as its candidate. The chief opposition candidate was Dr. Velasco Ibarra, supported by the Democratic Alliance, a coalition of groups opposing the administration. Velasco Ibarra, who was still in exile, set up headquarters in southern Colombia and from there maintained close touch with the Ecuadorian political situation. As the election, scheduled for June 10, approached, political tension increased. Riots broke out at Guayaquil, frequent centre of revolutionary movements, on May 20, and on May 26 the government closed all university classes until after the election. The expected uprising came on



Ecuadorian workers removing bark from a balsa tree trunk

May 28; Arroyo del Río and his cabinet promptly resigned and later went into exile in Colombia; Albornoz withdrew as a candidate. A junta took charge until the arrival of Velasco Ibarra in triumph on May 30. He assumed the provisional presidency the following day and was confirmed as constitutional president on Aug. 10.

The new regime made many changes in administrative and diplomatic positions in the following weeks. Diplomatic recognition came quickly; 22 foreign states had extended it by June 15. Pres. Velasco Ibarra on June 1 announced plans for a constituent assembly to draft a new basic law and make other changes. Elections on July 23 resulted in a clear majority for the pro-administration Democratic Alliance; the party composition was 32 Socialists, 28 Liberals, 25 Conservatives, 8 Communists and 3 independents. The assembly met during the remainder of 1944 as both a constituent and a legislative body. It questioned, but did not repudiate, the 1942 boundary adjustment with Peru; it did, however, take punitive steps against the Ecuadorian officials who had negotiated it. The assembly on Aug. 17 appointed a committee to study the position of the United States naval rights in the Galápagos Islands and on Dec. 29 the assembly advised the president that a new naval base agreement with the United States, for a 99-year lease, was inadvisable. The assembly on Nov. 8 approved a resolution for establishment of relations with the U.S.S.R. In domestic matters, the government, by decree of June 15, assumed administrative control of the national railway system. It also took tentative steps during

1944 to establish a national merchant marine. The government purchased the entire 1944 sugar crop.

The chief development of 1945 was the adoption of a new constitution, dated March 5, and approved by the constituent assembly after several months of deliberation. The new constitution made some important changes in the governmental system. The unitary form was continued, with a president directly elected for a four-year term and ineligible for the immediately succeeding term, but a unicameral congress was established, chosen in part on an elaborate basis of functional representation. Several novel features included representation in various bodies by the "political trends" of the right, centre and left. The bill of rights was elaborate and reflected a high degree of governmental regulation.

Senator Kenneth McKellar's renewal of the proposal that the United States buy or lease the Galápagos Islands for a naval base led to sharp criticism from members of the Ecuadorian constituent assembly. Lt. Gen. G. H. Brett and Rear Adm. H. G. Kingman conferred in Quito March 15 with the president and foreign minister regarding postwar use of Galápagos bases. A report circulated in mid-September that a preliminary agreement had been reached for United States use of the Galápagos in return for an Export-Import bank loan of \$20,000,000. The foreign office announced Feb. 3 that Ecuador had considered itself at war with Japan from Dec. 7, 1941. Ecuador signed the United Nations pact Feb. 14 at Washington, D.C. The foreign office on Feb. 15 announced agreement with Peru

over the last differences affecting their mutual boundary controversy; five months later the presidents of the two countries exchanged cordial felicitations. The soviet chargé d'affaires in Mexico announced on June 28 that diplomatic relations between his country and Ecuador had been established.

More Plots.-Domestic politics continued disturbed in 1945. Pres. Velasco threatened in late February to resign unless certain changes were made in the then pending constitution; he later declared his disapproval of the constitution and absented himself from Quito when it was promulgated. The president refused to accept a collective cabinet resignation March 11 and again on July 30. An alleged attempt at revolt by army officers was suppressed Aug. 3. The government granted amnesty on Aug. 14 to various members of former administrations. An executive decree in April authorized a contract for establishment of a domestic telecommunications system. A presidential decree on June 9 reduced import duties on automobiles, trucks, busses and tires by 75% in an effort to relieve the acute transportation problem. Quito began construction during the year of a modern water-purification system to cost \$1,000,000. Ecuador had its first experience with woman suffrage in municipal elections, which reflected a conservative trend, on Nov. 25, 1945.

Chronically turbulent political conditions continued in 1946. The government suppressed a revolutionary plot on March 30; the crisis was accompanied by many arrests and the suspension of constitutional guarantees. Soon afterward the 1945 constitution was suspended and the government announced elections for May 26 for a new constitu-

Ecuador: Statistical Data									
	1938			1940	1944				
Îtem	Value (000's omitted)	Amount or Number	Value (000's omitted)	Amount or Number	Value (000's omitted)	Amount or Number			
Exchange rate United States	1	Sucre = 7.4 cents 69 Sucres = £1		1 Sucre = 6.6 cents* 60.65 Sucres = £1*	,,	1 Sucre =7 cents *56.97 Sucres =£1 †			
Finance Government revenues Government expenditures Gold reserves National debt	\$8,980 (£1,837) \$9,497 (£1,943) \$2,000 (£409) \$28,077 (£5,743)				\$12,635 (£3,131) \$12,635 (£3,131) \$19,982 (£4,952) \$3,510 (£870)				
Communication Telephones Telegraph lines Radio sets		7,083 3,660 mi. 4,000		7,600* 4,000 mi.* 29,000*	.,,,,,,				
Minerals Gold Petroleum		74,042 oz. 332,895 tons		85,000 oz.		81,200 oz. 454,703 tons			
Crops Sugar cane (sugar content)		24,251 tons 20,393 " 16,755 "				72,132 tons‡ 34,809			
Forest products Tagua (Ivory nuts) Rubber Kapok		21,156 tons § 1,733 ,, § 694 ,, §							
Manufactures Petroleum		36,376 "							
Exports—Total	\$12,615 (£2,580) \$2,930 (£599) \$1,967 (£402) \$1,596 (£326) \$1,246 (£255)	439,000 tons 21,000 " 270,000 " 13 " 15,000 "	\$11,078 (£2,892) \$1,937 (£506) \$1,641 (£428) \$1,888 (£493) \$1,081 (£282)	393,000 tons 12,000 " 243,000 " 20 " 16,000 "	\$17,284 (£4,284); \$2,803 (£695); \$1,725 (£428); \$1,764 (£437); \$1,201 (£298);	15,000 " ± 239,000 " ±			
Imports—Total	\$11,064 (£2,263) \$1,164 (£238) \$477 (£98) \$413 (£84)	121,454 tons 11,003 tons 12,201	\$11,468 (£2,994) \$1,031 (£269) \$335 (£87) \$2 ()		\$13,880 (£3,440)‡ \$1,062 (£263)‡ \$1,015 (£252)‡ \$2 (¶)	88,290 tons‡ 25,901 tons‡			
Defense Standing army personnel Reserves Standing navy personnel Standing air force personnel Military expenditures	\$1,260 (£258)	5,450 40,000 394 450		5,450 40,000 450	4- (II	36 ,, ‡			
Education Primary schools Enrolment Secondary schools Enrolment Vocational schools Enrolment	,	2,239 180,000 21 	···	3,140* 248,905* 23* 9,137* 12*					
Universities				1,288* 4* 1,755*					
*1 941. †1943. ‡194	42.	rts only.	¶£522. ¶£	E495.					

ent assembly and congressional elections for June 30. Final returns for the constituent assembly indicated choice of 33 Conservatives, 20 dissident Liberals, 6 independents, 2 dissident leftists and 1 Democrat; Liberals, Socialists and Communists abstained from voting. Three prominent political leaders were arrested July 31 for alleged subversive plotting. The constituent assembly met Aug. 10, although an easily suppressed revolt the same day by 60 armed civilians tried to prevent its meeting. Velasco at once submitted his resignation as president, but the conservativedominated assembly on Aug. 11 rejected it by a vote of 43 to 10, with leftist and centre parties refusing to vote, and reinstated him until 1948. The assembly on Aug. 18 ended all political and military sanctions imposed after the 1944 revolution. The government on Jan. 6 signed a treaty of amity with China. Early in 1946, Ecuador proposed creation of a permanent conciliation commission for the American republics. The United States on Feb. 1 transferred its airfield at Salinas to Ecuadorian authorities and on June 30 the military bases in the Galápagos were evacuated.

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EDB (Economic Defense Board)

See WAR AND DEFENSE AGENCIES.

Eden, (Robert) Anthony

Eden (1897—), British statesman, was born June 12, 1897, and was educated at Eton and at Christ church, Oxford. After service in World War I from 1915 to 1919, he contested the Spennymoor division of Durham in 1922, and in the following year he was elected for Warwick and Leamington, which he thereafter continued to represent. He was lord privy seal and a privy councillor in 1934, and the following year entered the cabinet as minister without portfolio for League of Nations affairs, holding this post until the following December, when he became foreign minister. Disagreement with Prime Minister Chamberlain over the latter's policy of "appeasing" Germany and Italy led to Eden's resignation on Feb. 20, 1938.

Upon the outbreak of war on Sept. 3, 1939, he reentered Chamberlain's cabinet as dominions secretary, and on Dec. 23, 1940, he was appointed to the foreign ministry in Winston Churchill's cabinet.

Eden was active in the negotiations culminating in the important British-U.S.S.R. pact in July 1941. He participated in a number of international conferences, among which were the parleys with Stalin at Moscow and Tehran in 1943, and the Crimea, San Francisco and Potsdam conferences in 1945. At Potsdam he yielded his place as foreign secretary to Ernest Bevin, following the victory of the Labour party in the elections of July 1945. When Winston Churchill visited the U.S. in Jan. 1946, Eden led the Conservative party opposition in the house, attacking particularly the Labour government's acts of nationalization.

Edinburgh

The year 1937 saw Edinburgh, city, royal burgh, and capital of Scotland, peacefully engaged in its industries of printing, bookbinding, brewing, distilling and biscuitmaking; its streets were thronged with tourists attracted by the city's rich historical associations, its fine buildings and monuments and its picturesque position on the shores of

the Forth. In that year occurred one of the most colourful scenes Edinburgh had witnessed, when the king and queen paid their coronation visit to the city, and, on their way to take up residence at the palace of Holyroodhouse, drove along Prince's street under banners presented by, and bearing the coats of arms of, the burghs of Scotland.

Not predominantly an industrial city, Edinburgh had not suffered so acutely as more highly industrialized areas during the years of trade depression. With the outbreak of World War II, however, the city devoted itself to the production of war supplies, and soon its newly erected or hastily re-adapted factories were turning out a steady stream of war materials. Edinburgh had its first taste of actual warfare on Oct. 16, 1939, when, in the first raid on Great Britain, German bombers carried out a daring daylight attack on warships in the Firth of Forth. Its position on the Forth made the city particularly interested in naval activity, and the port of Leith played its full part in the country's war effort. One of the most memorable events at the port was the arrival in Feb. 1940 of H.M.S. "Cossack" after its epic voyage to a Norwegian fjord, where it had rescued British seamen from the German prison ship "Altmark."

The city still attracted a large number of visitors in wartime and was called upon to represent Scotland to the Allied forces. It played a leading part in the formation of street-savings groups, and its record showed that the city was second to none in war savings; the total subscribed from the start of the savings campaign to the end of World War II in May 1945 was $\pounds_{11}6,000,000$.

The civilian population in Edinburgh in 1937 was 466,800. In June 1946 it was 463,100, but since many citizens had not yet returned from the services the figure was not representative. (J. I. F.)

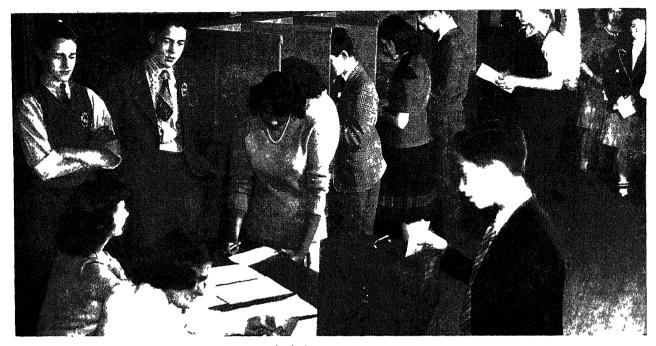
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Edison, Charles

Edison (1890-), U.S. secretary of the navy from 1939 to 1940, was born at Llewellyn Park, West Orange, N.J. on Aug. 3, 1890, the son of Thomas A. Edison. He was educated at Massachusetts Institute of Technology and in 1913 joined his father in business and research. He served as assistant secretary of the navy from Nov. 17, 1936, as acting secretary upon the death of Claude A. Swanson July 7, 1939, and as secretary from Dec. 30, 1939 to June 24, 1940, when he resigned to become the successful candidate for the governorship of New Jersey. Although a Democrat, he was a political opponent of Mayor Frank Hague of Jersey City, and after the end of his three-year term in 1944 he succeeded, despite the vigorous opposition of Hague, in having the state constitution revised.

Education

Great social crises have always exercised a profound influence upon the development of education. The ten years 1937-46, years of economic depression followed by war, were marked in the United States by widespread unrest and unsettlement in education on the one hand, and on the other by extensive analyses, surveys and discussions of plans for the improvement of education in all its aspects. While there were serious setbacks and dislocations, preparations were made for the readjustments which the domestic and the world crises revealed to be essential. The country could take pride in the fact that the average edu-



High school students of Springfield, Mass, voting in a school election, as part of a city-wide program for training youth in the use of democratic methods. The "Springfield Plan" also stressed understanding through education as the basis for improving inter-racial relations

cation of the personnel in the armed forces had risen in the period between the two wars from six grades of elementary school to two years of high school, but grave concern was caused by the educational and physical deficiencies of large numbers examined by the Selective Service. These deficiencies, however, objectified, in a way that could be understood by all, the existence of serious inequalities in the provision of educational opportunities throughout the country and brought home the fact that education should be viewed as a national concern and that the maintenance of satisfactory minimum standards could be assured only if local, state and federal resources were pooled. The recognition that the federal government must participate in the support of education demanded a clearer statement of policy to define the relations between federal and state authorities in the administration and provision of education.

This issue was precipitated by apparent encroachments of the federal government in educational affairs necessitated as emergency measures during the depression.

The ten critical years were marked by setbacks which were inevitable. Enrolments in elementary schools declined as a result of the declining birth rate. Secondary school enrolments fluctuated with opportunities for employment and directed attention to the problems of youth and the urgency of changes in the curriculum to meet the needs of all U.S. youth. Colleges and universities were affected by uncertainties from year to year about enrolments and their financial future, and were challenged to redefine their aims. New types of education were introduced—nursery schools to take care of preschool children as a social welfare measure during the depression and during the war to provide for their care while their mothers were engaged in war industries; the Civilian Conservation corps (CCC) and National Youth administration (NYA) to provide for unemployed youth; and a variety of projects in education under the Work Projects administration (WPA) to meet the needs of unemployed adults.

In the first of the ten years under discussion, Harvard university celebrated its tercentenary anniversary, notable not only as an event in the history of U.S. education but because of the reaffirmation of the national ideal in education. The ideal was clearly defined by President Roosevelt on this occasion: "Love of liberty and freedom of thought is a most admirable attribute of Harvard. But it is not an exclusive possession of Harvard or of any other university in America. . . . In the name of the American nation I venture to ask you to cherish its traditions and to fulfill its highest opportunities."

It was understood throughout the country that this reaffirmation of the democratic ideal was an answer to the challenge of foreign ideologies. Nor was it ignored; education for democracy became one of the chief preoccupations of educators. The Educational Policies commission, established in 1935 by the National Education association for a five-year period but continued throughout the decade under discussion, devoted the major part of its publications to a clarification of the aims and purposes of education in U.S. democracy-The Unique Function of Education in American Democracy (1937); The Purposes of Education in American Democracy (1938); Education and Economic Well-Being in American Democracy (1940); and The Education of Free Men in American Democracy (1941). In 1939 a Congress on Education for Democracy, convened by Teachers college, Columbia university, New York, N.Y., was attended by delegates from national organizations representing business, industry, labour, agriculture, voters, advertisers and other activities and representatives from foreign countries. The keynote for this congress was again sounded by President Roosevelt, who in a message wrote: "Education for democracy cannot merely be taken for granted. What goes on in the schools every hour of the day, on the playground and in the classroom, whether reflecting methods of control by the teacher, or opportunities for self-expression by the pupils, must be checked against the fact that the children are growing up to live in a democracy. That the schools make worthy citizens is the most important responsibility placed upon them." The proceedings of the congress were published under the title Education for Democracy (New York, 1939).

Education for democracy had always been the aim of U.S. education; the crises of the ten years 1937-46 focused attention on the urgency of needed reforms in curriculum and methods of instruction. In the years preceding the depression the emphasis, based on the theory of progressive education, had been on the freedom of the individual and at the extreme on a type of laissez-faire education without much attention being given to the development of a sense of social duty and responsibility. (See I. L. Kandel, The Cult of Uncertainty, New York, 1943). While the contributions of progressive education were not ignored, it began to be recognized that social values and social understanding must be given their rightful place in education. If the aims of education for citizenship in a democracy were to be realized, the educative process must develop in the future citizens an understanding of civic, social and economic affairs and a sense of responsibility for co-operating with their fellow citizens. In the discussions of the new adjustments and reforms needed in education, a shift took place from the cult of individualism to an emphasis on the school in the community, radiating from the community to the nation and from the nation to the world. (See Department of Supervision and Curriculum of the National Education Association, Toward a New Curriculum, Extending the Educational Opportunity of Children, Youth, and Adults, Washington, D.C., 1944; and Department of Elementary School Principals, Community Living and Elementary Education, Washington, D.C., 1944). The Progressive Education association changed its name in 1944 to the American Education Fellowship.

The strains and tensions caused by the depression crisis produced another problem for educators who realized that the interracial and interreligious conflicts were obstacles to the successful achievement of the democratic ideal and the great U.S. experiment. Started in Springfield, Mass., and followed in other school systems, a movement was launched to promote intercultural education which was later sponsored by several national organizations. (See S. G. Cole, J. Quillen and M. J. Wiese, Charting Intercultural Education, Stanford, Cal., 1946; H. Taba and W. Van Til, eds., Democratic Human Relations, Washington, D.C., 1945; and J. W. Wise, Springfield Plan, New York, 1945.)

Whether from the point of view of democratic ideals or of intercultural relations, a new emphasis began to be placed upon values. A movement to associate schools with religious instruction had begun before the depression in the form of weekday schools or of released time. In May 1944 a conference was called by the American Council on Education with the co-operation of the National Conference of Christians and Jews to discuss the issues raised in discussions of religion and public education. That a need was felt for incorporating religious values in education was agreed upon at the conference; it was also clear that the introduction of sectarian religious education in public schools would be contrary to the U.S. tradition. (See American Council on Education Studies, Religion and Public Education, Washington, D.C., 1945; and C. H. Moehlman, School and Church, the American Way, New York, 1944.) The problem was discussed from another point of view in the seventh yearbook of the John Dewey society, The Public Schools and Spiritual Values (New York, 1944). The volume aimed to establish the broadest possible area of agreement between "secularists" and the "supernaturalists." From still another angle the problem of values entered discussions of the place of the humanities in a liberal education, particularly at college level.

These were some of the general issues discussed in the decade 1937-46. More time had to elapse before they

could be woven into a general pattern. The more immediate problems which emerged during the period and which occupied the major part of the attention of all concerned with education are presented in the following pages. A summary of the outstanding changes which pressed for attention at the close of World War II was presented in a pamphlet of the Educational Policies commission, National Education association, *Proposals for Public Education in Postwar America* (Washington, D.C., 1944):

(1) Wider application of the principle that an acceptable minimum of educational opportunity should be available to every individual regardless of his status. (2) General improvement of programs to develop physical and mental health. (3) Greater emphasis upon intelligent self-direction in study and learning. (4) Increased opportunity for learning how to do, particularly through work experience in vocational programs. (5) Increased opportunity for learning and practicing the ways of democratic group living. (6) More systematic adap-

Impressions of war in the drawing of a student at New York university's Clinic for the Social Adjustment of the Gifted Child, in 1942



tation of teaching methods, content, and length of schooling to individual and social needs. (7) Broader cultural background and greater technical knowledge and skill on the part of all professional staff members. (8) Reorganization and enlargement of local school districts and the integration of state educational facilities in the interest of efficient and economical school programs. (9) General acceptance of the principle that public education should receive its financial support from all levels of government, state and national.

Equality of Educational Opportunity.-The U.S. people had always nurtured a deep-rooted and abiding faith in education. In his "Farewell Address," George Washington urged his fellow citizens to establish institutions for the dissemination of learning as a primary concern. The faith in education was re-enforced by the ideal of providing equality of educational opportunities for all. Despite the provision of educational facilities unparalleled in any other country, serious concern began to be shown during and after World War I as to whether adequate provisions were being made throughout the country to insure equality of educational opportunity. During the depression and World War II the most persistent problem discussed centred on this subject. In the depression years many communities were unable for financial reasons to keep their schools open at all or were able to keep them open only for a curtailed school year. Large numbers of teachers joined the ranks of the unemployed, while the salaries of those retained in service were considerably reduced. Expenditures for education declined everywhere, and capital expenditures for new buildings or for repairs were reduced to a minimum.

More revealing than the disruption of educational services during the depression were the facts discovered by Selective Service, which rejected some 5,000,000 young men for military service on account of physical, mental and educational deficiencies; more than 1 in every 3 examined was rejected. Of the registrants in the 2 registrations before Pearl Harbor, 347,038 made their mark on the registration cards because they could not write their names. Many others were found whose reading ability was so poor that they were unable to read orders, signboards, regulations and instructions; they were, in the phrase that became current, "functionally illiterate." In the words of the Director of Selective Service, "With great pressure on our manpower resources, it is regrettable that we lose so many physically qualified, who must be rejected because of illiteracy." Other shortcomings were also discovered; for example, inadequate preparation among officer candidates in mathematics and an inadequate number of men with a mastery of foreign languages. These shortcomings did not arise from failure to provide opportunities for education, but they did reflect certain trends in education at the high school and college levels.

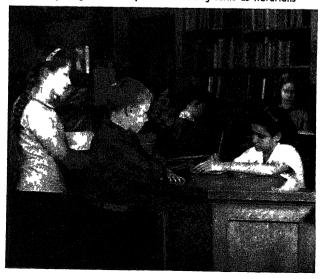
As a consequence of the striking facts about the status of education revealed during the depression and war years, a number of detailed studies were made which destroyed the general assumption that the ideal of equality of educational opportunity was universally put into practice throughout the country. On Sept. 19, 1936, President Roosevelt appointed an Advisory Committee on Education for the purpose of making a study of the experience under the existing program of federal aid for vocational education. On April 19, 1937, the president requested the committee to give more extended consideration to the whole subject of federal relationship to state and local conduct of education. Under the enlarged terms of reference the committee investigated the status of education in all its

aspects and the needs that had to be met. The committee transmitted a comprehensive report early in 1938. The general conclusions of the committee, as presented in a summary of its report published under the title *The Federal Government and Education* were as follows:

The public school system in the United States greatly needs improvement. Glaring inequalities characterize educational opportunities throughout the Nation. The education that can be provided at present in many localities is below the minimum necessary to preserve democratic institutions. Federal aid is the only way in which the difficulties in this widespread and complex situation can be corrected.

The committee pointed out in detail the nature and causes of the inequalities found in every aspect of education: the amount expended per pupil in average attendance; teachers' salaries; length of school term; number of pupils of high school age enrolled in high schools; value of school property; expenditure on school equipment and instructional materials; provision of health and welfare services; and expenditure per classroom unit. Inequalities existed not only among states but within each state, and between urban and rural communities. One of the chief causes of the inequalities was the manner of financial support based on a property tax and the fact that the financially poorer states and communities had a larger number of children per 1,000 of their populations than the wealthier states, which resulted in the poorer states making greater effort and ranking higher in the percentage of income devoted to education than the wealthier states and yet unable to provide even a satisfactory minimum of educational facilities. The amount and quality of education which children and youth could enjoy were dependent not only on the economic condition of their parents but also on their place of residence. In a large measure, too, the reason for the prevailing inequalities was to be found in the traditional system of local administration of education which resulted in the existence, at the time when the report was made, of 127,000 independent areas of school administration, ranging from the district with a single-teacher school and a small number of children of all ages to an area as large as New York city. The number of school districts was reduced to 115,000 by 1946, but without any serious effect on the situation. Because of the migration and mobility of the U.S. people, education had become a national concern. Education had to be

Junior high school students at Winnetka, Ill., being initiated into library usage with many of them taking turns as librarians



recognized as the bulwark of democracy and as an agency to equalize the condition of men and reduce class, race and sectional distinctions. In concluding its discussion of inequality of educational opportunity the committee stated that:

If for a long period of years, each succeeding generation is drawn in disproportionately large numbers from those areas in which economic conditions are poorest, if the population reserves of the Nation continue to be recruited from economically underprivileged groups, and if the inability of the depressed economic areas and groups to provide proper education for their children is not corrected by aid from areas and groups more prosperous, the effect on American civilization and on representative political institutions may be disastrous.

The Advisory Committee on Education supported its discussion of inequality of educational opportunity by factual data based on statistics of 1935–36. The same statistical approach to the problem of providing an adequate system of education was made in a pamphlet on Federal Aid for Education: A Review of Pertinent Facts, issued by the National Education association in 1942. In a report entitled Unfinished Business in American Education: An Inventory of Public School Expenditures in the United States, issued jointly by the National Education association and the American Council on Education in 1946, Professors John K. Norton and Eugene S. Lawler also presented a factual and objective picture of education and the problems to be met.

The census of 1940 showed that 2,000,000 adults had never attended any kind of school; 10,000,000 adults, not confined to the financially poorer states, had had so little education as to be virtually illiterate; 3,000,000 children between the ages of 6 and 17 were not in school because of ignorance of parents and poor enforcement of compulsory attendance laws. According to Selective Service, of the 17,000,000 men examined in the draft, 5,000,000 were rejected for educational, mental and physical deficiencies. Education in the United States was provided in school buildings ranging from one-room shacks taught by relatively unprepared teachers to spacious buildings with the finest equipment and instructional materials and taught by competent teachers. In 1939-40 the best financed school systems spent \$6,000 or more per classroom unit per year on salaries, books, equipment and maintenance; 19,-497 children enjoyed the advantage of schools at this level. The poorest school systems, attended by 38,283 children, spent less than \$100 per classroom unit. In the same year 1,401,605 children attended schools in which the cost per classroom unit was \$4,000 per year, while 1,175,996 children were in schools where the unit cost was less than \$500 per year. For the country as a whole the median cost per classroom unit per year was \$1,600. The greatest need existed in areas where the largest numbers of children were found and where the cost per unit was low. Thus, while the ratio of the number of children of school age per 1,000 of the population was 226 for the country as a whole, it was 296 in South Carolina, 193 in New York and 178 in California.

The variations in per capita income in the states were even greater—\$960 in Nevada and \$195 in Mississippi, which in terms of income per child to be educated amounted to \$5,140 in Nevada and \$693 in Mississippi. The poorer states had, therefore, to devote greater effort to the provision of funds for the support of education than the wealthier. The ten states with the lowest expenditures allotted a larger percentage of their incomes to education than the ten states with the highest expenditures. Yet in spite of this the states low in income had low expendi-

tures for education; Mississippi ranked ninth in order of percentage of income devoted to education (3.41%) but the median expenditure for education was only \$400 per classroom unit, while New York, which devoted 2.61% of income to education, spent \$4,100 per classroom unit. In the dual system states the median expenditure per classroom unit for white children was \$1,186 as compared with \$477 for Negro children.

That inequalities in education affected children not only in low-income states but also in rural areas all over the country had long been known. The problem of rural education came to the fore with the migration of families in search of work during the depression. It was recognized more than ever before that the quality of education given in rural schools would in the long run affect the quality of citizenship in the urban areas to which the rural population migrated, as well as in the nation as a whole. At a White House Conference on Rural Education held in Oct. 1944 "A Charter of Education for Rural Children" was drawn up. The conference pledged itself to the achievement of the following educational rights for every rural child: a satisfactory, modern elementary and secondary education; an educational program to bridge the gap between home and school and between school and adult life; health services, educational and vocational guidance, library facilities, recreational activities, and where needed, school lunches and transportation facilities at public expense; teachers, supervisors and administrators familiar with rural life; educational service and guidance during the entire year and full-time attendance at a school open for not less than 9 months in each year for 12 years; a satisfactory, modern school building; participation through the school in community life and culture; a local school system sufficiently strong to provide all the services required for a modern education; and the use of the tax resources of the community, state and nation to guarantee a U.S. standard of educational opportunity.

The campaign to correct inequalities in education had for a long time been conducted mainly by educators. A powerful ally was found in the U.S. Chamber of Commerce, which in 1945 published the report of its Committee on Education, Education, An Investment in People. After presenting statistics showing the existence of widespread inequalities, the report illustrated the relation between education and income by the fact that 50% of those who attended college or went beyond, 39% of those who attended high school or graduated, and 11% of those who had 8 years of schooling reached the \$5,000 bracket. A somewhat similar distribution was found in the relation between rent paid or rental value of owned homes. Finally, data were presented showing that the volume of economic activity in the various states rose or fell with the level of educational expenditure and the median years of completed education in such matters as per capita retail sales, number of telephones per 1,000 of the population and circulation of national magazines. A close relation was also indicated between the rate of educational deficiencies as shown by Selective Service and current expenses for education. The committee concluded that education had become an essential instrument in the expansion of the nation's dynamic economy.

Evidence was accumulated during the decade 1937-46 that young people could not for financial reasons avail themselves of such opportunities as existed. This fact had already been brought out by George S. Counts in his study of *The Selective Character of Secondary Education* (1922);

it had been confirmed by a number of other studies. The National Survey of Secondary Education (Washington, D.C., 1932) had shown that 31% of the high school students left school for economic reasons. In Maryland, Howard M. Bell found that the percentage was 52% (Youth Tell Their Story, 1938); the Regents' Inquiry in New York state reported in 1939 that the most important cause for leaving high school was financial; in a study of Parental Income and College Opportunities (1940) Helen B. Goetsch found that of 1,023 high school graduates in Milwaukee, Wis., able to profit from college education only 35% were in full-time attendance in some college and that there was a close relationship not only between the amount of fulltime education but also between the choice of professional careers and parental incomes. In Kentucky H. L. Davis, in a study of the Utilization of Potential College Ability in the June, 1940, Graduates of Kentucky High Schools (1942), found that for economic reasons about half of the best college risks failed to go to college, while about one in seven of the poor college risks did continue from high school to college. Finally, the whole subject was fully discussed from every angle by W. Lloyd Warner, Robert J. Havighurst and Martin B. Loeb in Who Shall Be Educated: The Challenge of Unequal Opportunities (1944). The solution by the award of scholarships or other subsidies to poor but able youth was advocated by President James B. Conant in "Education for a Classless Society" (Atlantic Monthly) and in the report on Education and Economic Well-Being in American Democracy of the Educational Policies commission of the National Education association (1940).

Federal Aid.—It was generally agreed that inequalities could be removed only by federal participation in the support of education. The movement for federal aid had begun during World War I; it continued throughout the decade 1937–46, and bills were introduced in congress almost annually after the initiation of the proposal, but without success. One reason for this failure was general ignorance of the fact that the history of federal activities in education could be traced back almost to the founding of the republic.

The temporary dislocation of the nation's educational system during the years of the depression and the pressing need of trained civilian manpower inevitably led to increased financial aid from the federal government and to the assumption of extensive educational functions by almost every department of government. This development was particularly marked in connection with the emergency programs which began to be undertaken in 1933.

Funds amounting to a total of about \$22,000,000 were provided to keep schools open in many areas. The Federal Emergency Administration of Public Works (PWA) made grants for the construction and repair of educational buildings which up to 1937 amounted to a total of \$263,-000,000, supplemented by loans of \$83,000,000. Under the Works Progress (later Work Projects) administration (WPA), \$250,000,000 was spent for the repair of old buildings and the construction of new buildings for educational and community recreational activities. The same administration under its emergency education program hired some 44,000 unemployed teachers to give various types of part-time education which enrolled more than 1,700,000 persons. In the schools books were repaired, libraries maintained and lunches provided in addition to numerous other useful activities. A notable contribution was also made by WPA in the support given for the establishment of nearly 1,500 nursery schools during the depression years and an increasing number during World War II to take care of children of working mothers in defense areas.

In 1934 a program of student aid was begun under the Works Progress administration and transferred in 1935 to the National Youth administration (NYA). Aid was given under this program to students who otherwise could not remain in high school or college in return for part-time employment in the school or on the campus or on work of value to the community. The appropriations to NYA rose from \$35,517,000 in 1935 to \$157,159,000 in 1941 and dropped to \$151,760,000 in 1942. A year before the student aid program was adopted the Civilian Conservation corps (CCC) was established as a form of work relief which combined work with other forms of educational experiences at the elementary, secondary and even college levels. At the same time the older activities of the federal government in education were continued with increased grants for instruction and research in land-grant colleges, for agricultural and home economics extension work in rural areas and for vocational education and vocational rehabilitation.

World War II imposed new responsibilities, the major burden for which was assumed by the federal government, to promote education for defense. In addition to the training of army and navy personnel in colleges, an extensive program for the training of workers in industry and agriculture was undertaken in 1940 under the direction of the U.S. office of education and continued until June 1945. During this period provision was made for the training of 12,000,000 men and women in high schools, special courses, colleges and universities. Of this number, 1,500,000 men and women were trained in colleges and universities, some under the Engineering, Science and Management War Training programs (ESMWT), some in special courses, others in co-operation with industrial concerns. Training for industry was provided for 8,000,000 students in 2,500 schools and for food production for 2,500,000 in 15,000 farm communities. Under the Lanham act, 1941-45, child care centres were established for children of mothers engaged in war industries. Funds were also provided by the federal government for maternal and child health, for welfare services for dependent and delinquent children and for medical care for crippled and handicapped chil-

For the fiscal year ended on June 30, 1942, the federal government provided \$286,401,164.35, of which \$55,711,-247.17 came under regular funds and \$230,689,917.18 under emergency funds provided for the crises created by the depression and the war. Of the emergency funds, \$15,-878,189.42 was allotted for defense training in colleges, \$99,704,280.21 for defense training in secondary schools and \$54,294,597.00 to provide educational facilities for war work areas. Other funds were appropriated by the federal government for international cultural relations conducted by the Office of the Coordinator of Inter-American Affairs and the Division of Cultural Relations of the department of state. It was estimated in 1944 that the educational expenditures of federal bureaus and agencies amounted to a total of \$1,500,000,000, more than half of the total expenditures (about \$2,500,000,000) for elementary, secondary and college education provided by local, state and federal agencies.

Despite the fact that the federal government during the depression and the years of World War II embarked on an extensive educational program in addition to the continuing program of supporting education, proposals for the development of a policy of federal aid to correct the

glaring inequalities in the provision of educational opportunity continued to meet with resistance. The opposition came in the main from groups which insisted on the tradition of states' rights and feared that federal aid might be followed by federal control in education. It became clear during the depression and war years that the appropriation of federal funds for education was not based on any clear policy concerning the relations which should exist between federal and state governments. While some of the funds were channelled through the state and local educational agencies to be administered by them under federal supervision of a general nature, others were administered directly by federal bureaus and agencies.

The crisis came to a head in 1941 with mounting criticism of the tendency on the part of federal agencies to administer directly the educational services provided under the programs for the Civilian Conservation corps and the National Youth administration. In a bulletin, The Civilian Conservation Corps, the National Youth Administration, and the Public Schools, published by the Educational Policies commission of the National Education association in 1941, two questions were raised: should the federal government operate and control educational programs to meet needs which affected the national welfare and which could be met by the unaided powers of the states? Or should they be met by the federal government by working through the state and local educational systems? These issues were raised by the operation and control through the CCC and the NYA of nation-wide programs of education for unemployed youth, separate from the state and local educational systems. Three principles were recommended by the Educational Policies commission to govern the relations between federal, state and local agencies: (1) to give leadership to promote concerted nation-wide action; (2) to supply financial aid in order to equalize opportunities in established services of education, to establish new services and to aid needy students; and (3) in times of unemployment, to provide employment on public works programs for youths who, having completed their vocational education, could not be placed in regular jobs. The commission recommended that the CCC and the NYA should be discontinued as separate youth agencies and that their functions should be transferred to state and local educational agencies. The federal government should meet needs which affected national welfare, cut across the bounds of states and were beyond the unaided powers of the states to meet. The government should not itself operate and control educational programs, but should work through the state and local systems and strengthen these agencies by supplying leadership and financial aid without control. As a consequence of the mounting criticism, and also because of the entrance of the country into World War II, which demanded other methods for training youth, the CCC was discontinued in 1942 and the NYA in 1943.

The movement for federal aid for education, as already pointed out, was strengthened by the light which had been thrown on the inequalities in education. It became increasingly apparent that the major issue was the relationship of the federal government to the states, when and if aid was approved by congress. The Advisory Committee on Education, in its report to President Roosevelt, stressed the values of the U.S. tradition of local controls in government and especially in education. Efficiency might be secured by centralization of control but at the price of suitable adaptation to local needs. One of the great values of local freedom was the assurance of experimentation, healthy rivalry between localities and popular interest in education. The preservation of local control over education remained one

aspect of the preservation of U.S. democracy. If federal aid were provided, however, there should be a limited amount of control to insure honesty, legality and efficiency in the expenditure of funds. Safeguards could be established without bringing the federal government into the local management of schools. The use of federal aid to exercise control over the content and process of education would be resisted as incompatible with the maintenance of local initiative and responsibility. The committee recommended the application of these principles to any new laws to provide federal aid and the amendment of existing laws to conform with these principles. Control over courses of study should be avoided and the duty of determining the character of education, whether general or vocational, should be left to the states.

In a bulletin published in 1945 by the Educational Policies commission of the National Education association on Federal-State Relations in Education, attention was again directed to the inequalities in education which existed throughout the nation. Federal aid had increased but on a piecemeal or hit-or-miss basis. The federal government played an important role in education, but the pattern and directions of federal action in education were indefinite and chaotic. Education should be looked upon as an integrated whole directed to producing competent citizens for a democracy, but its administration, organization, content and process should result from the co-operation of all concerned. Federal participation was essential since education was a national as well as a local interest, but federal action should be restricted to supplementing and assisting local administrative authorities. The federal government should (1) supply financial assistance and control the expenditure of funds by way of audit and adequate reports to insure their use for the purpose for which they are granted, and (2) provide leadership through research, investigation, co-operation, reports and recommendations for the development of education.

The commission found not only an absence of policy to govern federal-state relations, but considerable overlapping of functions between the many federal bureaus which had something to do with education. Grants when made should be for general rather than special purposes in order to encourage the development of balanced programs of education and to avoid over-emphasis on particular aspects. The main purpose of general grants should be to establish a national minimum of financial support for public education in the states, and the funds should be distributed on an objective basis such as the number of children and youth attending school and the fiscal capacity of each state. The commission was of the opinion that the matching of funds by the states was undesirable since such a practice would favour the richest states and would again result in unbalanced educational programs.

The number of agencies concerned with education in the federal government, the commission recommended, should be reduced, and only those in which educational activities constituted an integral part of their functions should be retained. To co-ordinate their work an interdepartmental committee should be created, but more important than this, in the opinion of the commission, was the need of a more effective federal office of education to exercise leadership, to serve as the agency of the federal government in dealing with the states, to conduct investigations and research, to collect and publish statistical and factual information concerning education and new educational enterprises and procedures and to conduct con-

ferences of lay and professional leaders in education for the consideration of matters of educational policy and procedure of national interest. The commission further recommended the creation of a national educational commission or board of from 12 to 15 outstanding citizens appointed by the president to serve as a general advisory body on education.

The prospects of federal legislation of federal aid appeared to be brighter in 1946 than at any other time during the preceding ten years. This was due to the formation of a bipartisan group which met in Washington on Nov. 15, 1945, on call of Congressman Robert Ramspeck (Georgia) to sponsor house of representatives bill 1296, for which H.R. 4929 was later substituted. As a consequence of this meeting a Committee for the Support of Federal Aid for Public Schools was formed. Even more encouraging to the advocates of federal aid were the remarks of Sen. Robert A. Taft (Ohio), chairman of the Republican steering committee, who on Aug. 4, 1945, proposed on behalf of the committee that the legislative agenda for congress, following the summer recess, should include: (1) "A bill to extend federal aid to assist the states to develop a comprehensive health program through public and private agencies ... and establish medical inspection and physical education in our schools," and (2) "A bill to provide federal aid to enable the poorer states to provide a minimum of education for every child." The Democratic platform, adopted at the Chicago convention in 1944, included a plank favouring "federal aid to education administered by the states without interference by the federal government." In his annual message to congress on Jan. 21, 1946, President Truman repeated the proposal which he had made in his budget message the previous year, "that the federal government provide financial aid to assist the states in assuring more nearly equal opportunities for a good education," since inequality among the states would still continue even though higher incomes might be expected than before World War II. He also recommended grants to meet current arrears in the construction of educational facilities, and ended his message with the statement that:

The federal government has not sought, and will not seek, to dominate education in the states. It should continue its historic role of leadership and advice and, for the purpose of equalizing educational opportunities, it should extend further financial support to the cause of education in areas where this is desirable.

It was significant that the later bills to provide federal aid for education contained specific provisions to prohibit the exercise of any direction, supervision or control over or prescription of any requirements with respect to any school or any state educational institution or agency to which funds would be made available. This provision was contained in an amendment to senate bill 181, proposed on March 27, 1946, by Sen. Lister Hill of Alabama (for himself, Sen. Elbert D. Thomas of Utah and Sen. Taft). The bill authorized appropriations "for the purpose of more nearly equalizing public elementary school and public secondary school opportunities among and within the States," beginning for the fiscal year ending June 1947 with the sum of \$150,000,000 and rising for the fiscal year ending June 1949 and for each fiscal year thereafter to \$250,000,000. The apportionment was to be based on the number of children between 5 and 17 and the fiscal capacity of each state, with a definite provision of \$40 for each child to be educated and with special advantages for the



Children of the Redlands public schools in California being trained to work together through constructional activities

poorer states. The bill carefully safeguarded the educational interests of minority races in those states which maintained dual systems of education. The funds would be administered in each state by the education authority which was given the responsibility of auditing local expenditures and submitting annual reports to the U.S. commissioner of education. The companion bill to S. 181 in the house of representatives was H.R. 4929.

In 1943 the National Resources Planning board drafted proposals for a postwar program for education to include education for health and safety, vocational training, education for leisure, home and family living, national security and citizenship, social and economic education, the retraining of men and women demobilized from the armed forces and defense industries and the provision of opportunities for those whose education had been interrupted by the war. The cost of this program would be \$6,100,000,-000, including expenditures for the following purposes: \$3,000,000,000 for preschool, elementary and secondary schools; \$400,000,000 for junior colleges; \$1,000,000,000 for colleges, universities, professional and technical institutions; \$300,000,000 for adult education; \$300,000,000 for student aid; and \$200,000,000 for public libraries. In addition, the board recommended an expenditure of \$2,380,000,000 to eliminate building deficiencies for these aspects of education. The total cost of the proposed program would be slightly more than twice as much as the total expenditures for education by all public agencies in 1940-\$2,817,000,000.

Status and Salaries of Teachers.-The U.S. public had

never extended its faith in education to an adequate recognition of the importance of the status of teachers or of the necessity of providing salaries commensurate with that faith. It was from this failure that many of the difficulties in maintaining adequate standards in education arose during the depression and war years. One serious effect of the depression was the closing of many schools, particularly in rural and village areas. A sense of patriotic duty when the United States entered World War II impelled many teachers to leave the profession either for service in the armed forces or for work in war industries, despite repeated statements by the War Manpower commission and the director of Selective Service that teaching was an essential occupation. It was estimated that 300,000 teachers left the profession, of whom 100,000 joined the armed services.

The mounting shortage of teachers caused the gravest concern during the war. The shortage of teachers was accompanied by great reductions in the number of students entering and graduating from teachers colleges and normal schools. In 1943-44, only 5,000 students were graduated from these institutions as compared with 10,000 graduates a year in normal times. The shortage not only affected schools in rural and small communities, but dislocated the work of high schools everywhere by the entrance into the armed services and war industries of teachers of such subjects as mathematics, physics, chemistry, physical education and vocational training. Married women who had left the teaching profession were recalled, and in a number of states emergency certificates were granted to inexperienced young people after a brief period of training. In 1943-44 such certificates were granted to 69,423 teachers as compared with 2,305 before Pearl Harbor. In the same school year there was a turnover of 189,000 teachers in contrast to 95,000 a year in normal times, and in 1944-45 the number of teachers new to their jobs was 168,000, the large majority in rural schools. It was estimated that as a result of the teacher shortage, the granting of emergency certificates and the rapid turnover, perhaps 500,000 children of school age received no education and an almost equal number were given an education below acceptable standards. Serious efforts were made by national and state organizations to attract recruits into the teaching profession, but with little success until the veterans began to

Although the standards of preparation for elementary school teachers rose from two to three or four years beyond high school graduation, and from four to five years for high school teachers, salaries were not increased to correspond to these requirements. The average salary of teachers was at least \$500 less than average earnings in industry in 1944-45. During the decade 1937-46 there was an increase in the average salary of teachers, supervisors and principals, but it did not keep up with the increase in the cost of living. The average salary in 1935-36 was \$1,283, a decrease from the average of \$1,417 in 1931-32; in 1939-40 the average rose to \$1,441, in 1942-43 to \$1,599 and in 1943-44 to \$1,755 (estimated). While the earnings of industrial workers increased 56% from 1940 to 1943, teachers' salaries increased only 11%. The estimated average salary of \$1,786 in 1944-45 would buy only what \$1,350 would have bought in 1940.

The range of average salaries in 1944-45 indicated the inequalities found in the 48 states. Four states (Arkansas, Georgia, Mississippi and South Carolina) paid less than \$1,000 a year; 27 states less than \$1,500; in 11 states the average salary was more than \$2,000; and in only 2 states was the average above \$2,500-\$2,616 in California and \$2,726 in New York.

The decade brought to light more clearly than in any other period the widespread inequalities in education generally; they also directed attention to the absence of any recognized norms in the requirements for the appointment of teachers. In 1939 there was created under the American Council on Education a Committee on Teacher Examinations with which the superintendents of the largest and best organized school systems co-operated. While it was hoped that the examinations might become national in scope, there was no intention of encroaching on the autonomy of local education authorities in the selection of their teachers. The committee hoped to reduce the great variety of standards and to establish national norms for appraising the qualifications of teachers. It was recognized that the tests to be administered by the committee were not the sole or even the most important basis for the selection of teachers but that they could be used to supplement other requirements. Examinations prepared by the Cooperative Test service were first given in 1940 and continued to be given during the war, but to gradually diminishing numbers of candidates. The total battery included two groups of tests: (1) in English, general culture, professional subjects and contemporary affairs for all candidates; and (2) special tests for elementary and secondary

In 1939 the American Council on Education appointed the Commission on Teacher Education for a five-year term to serve as a clearinghouse of information on successful practices and promising experiments in the education of teachers. The commission conducted conferences and organized workshops for consultation and exchange of information, and encouraged and evaluated experiments in preservice and in-service education of teachers. Experiments were initiated with a variety of programs in this area in 20 nationally representative institutions (teachers colleges and liberal arts colleges) and in 14 representative school systems. The commission, whose work was directed by Dr. Karl W. Bigelow, issued a number of pamphlets and books. The final statement, which presented a summary and analysis of the commission's experience, was published under the title The Improvement of Teacher Education in 1946.

Public school teachers on strike for higher wages at St. Paul, Minn., in 1945, enjoying hot food brought by some of their students. Low salaries, lagging far behind the wartime rise in industrial wages and the cost of living, contributed to a dangerous shortage of teachers in U.S. schools during and after World War II



Secondary Education.-In no branch of education did greater uncertainty and unrest prevail during the decade than at the secondary level. The problems represented the accumulation of difficulties which had begun to manifest themselves at the beginning of the century. An education devoted primarily, but in U.S. history not wholly, to preparation for college entrance and based on an academic curriculum became the object of criticism and attack with the rapid increase in the number of boys and girls in the high schools for whom the academic subjects appeared to be unsuitable. The enrolments in public high schools rose from 2,494,676 in 1920 to 4,799,867 in 1930; by 1935 they had increased to 5,974,537 and 5 years later to the highest figure ever reached thus far-7,113,282. By 1942-43 the enrolments had dropped by nearly 1,000,000 to 6,122,066, partly because of war conditions and partly because of the reduced birth rate in preceding years.

The curriculum was broadened but mainly by the addition of new subjects more practical in character and without a general and integrated reorganization of the program. The social and economic changes which took place in the period between the two world wars, the increasing unemployability and unemployment of youth, the growing intercultural conflicts, the challenge to democracy from alien ideologies during the critical years of the depression, the shortage of teachers and the demands of the war years tended to focus attention on education and particularly on secondary education. The NYA brought out the importance of providing aid to students if they were to be enabled to continue their education, while both the NYA and the CCC experiments emphasized the value of work experience in the preparation of youth for adult life.

From another point of view the demands of the war revealed certain defects in the results of high school and college education. Difficulties were encountered in recruiting military or civilian personnel with an adequate mastery of the languages which were included in the curriculum of both high schools and colleges. Before the entrance of the country into the war Adm. Chester W. Nimitz drew attention to the fact that, owing to the lack of candidates for the naval officers' training corps and for commissions who were suitably prepared in mathematics, the passing mark in the examinations had to be lowered. Finally, the results of a test on U.S. history given by the New York Times to 7,000 students in 36 colleges and universities indicated that there was not only a lack of knowledge but widespread misinformation about the subject. Although considerable controversy was aroused about the validity of the test, there were many who showed concern about the results of the investigation. One member of the senate committee on education and labour proposed that federal aid should be provided to promote the study of U.S. history in schools and colleges, while the senate ordered the survey published as a senate document. Several states -Illinois and New Jersey, for example-enacted laws requiring the teaching of U.S. history in all publicly-supported institutions or for a specific number of years in high schools. The American Historical association, the Mississippi Historical association and the National Council for the Social Studies appointed a committee to investigate the whole question of the teaching of history in schools and colleges. The committee reported that the subject was widely taught, but a larger number of more competent and better prepared teachers was needed.

The criticisms of the work of the high schools from the point of view of the organization of subject matter

were, however, either discounted or ignored, and the trend was set in another direction. In 1940 the American Youth commission appointed a special committee to report on needed changes in the curriculum of secondary schools. The committee in its' report, What the High Schools Ought to Teach, published later in the same year, based its recommendations on the change in the character of the high school population, the different social origins and occupational interests of the students, the need of a program to meet the interests of the large majority and the fact that only a minority would continue education beyond the high school. It pointed out that a great many pupils in high schools had reading ability of the fifth- or even the fourth-grade level, that many who were slow learners lacked either interest in subjects found in the prevalent programs or proper motivation for study. The committee concluded that the high school curriculum was generally inappropriate, that the conventional subjects-English, mathematics, natural sciences and foreign languages-needed to be re-examined, with less emphasis on the traditionally academic, and better adaptation to the interests and abilities of the students. It was recommended that the program of secondary education should concentrate on English, social studies and work experience.

This report was followed in 1944 by a more extensive report on Education for All American Youth, prepared and published by the Educational Policies commission of the National Education association. Purporting to be a description of secondary education as it might be conceived to be in 1964, the report was based on the assumption that the prewar pattern of education was "shattered beyond repair," that "the end of the war was the end of an epoch to which there could be no return in education or in any other aspect of life," and that the tremendous pressure of the traditional educational program stood in the way of reform. The types of programs that should be developed to meet the needs of all U.S. youth were illustrated by accounts of two hypothetical experiments-one in a rural and one in an urban high school in courses extended by two years to include community institutes or junior colleges as a normal part of the reorganized system of education. The traditional arrangement of the program by subjects would be replaced by "curriculum areas." Thus, in the urban high school the curriculum areas would consist of "common learnings" ("to help students grow in competence as citizens of the community and the nation; in understanding of economic processes and of their roles as producers and consumers; in co-operative living in family, school and community; in appreciation of literature and the arts; and in the use of the English language"); health and physical education; science, emphasizing methods, principles and facts needed by all students; vocational preparation including also preparation for college entrance; and the development of individual interests-avocational, cultural or intellectual. Corresponding programs would be developed for rural high schools. The conventional subjects would appear in the new courses insofar as they would be needed to meet the common needs of youth, but they would be found "in unaccustomed settings" among the "common learnings."

The Educational Policies commission sought in these recommendations to establish two objectives: (1) to counter the trend of the previous quarter of a century to expand the program of studies to such a degree that it became unwieldy and educationally meaningless; and (2) to provide a common education for all youth so that they might acquire a common store of reference as future citizens, in the interests of a common democratic goal. Planning for

American Youth, published by the National Association of Secondary School Principals to stimulate improvements in the high school program, was based on the recommendations of the Educational Policies commission's report.

The trend to increasing enrolments in high schools, caused by the serious reduction in employment opportunities during the depression years, was reversed in the years immediately preceding and during World War II. The shortage of manpower, the attraction of high wages and a sense of patriotic duty to contribute to the war effort led to the withdrawal of students from high schools, while the demand for skilled or semi-skilled workers turned students in the schools away from the academic subjects to vocational training. This tendency was encouraged by the U.S. office of education through the distribution of funds appropriated for the promotion and development of courses in vocational training of all kinds, of different lengths of duration and at different levels, and through its overemphasis on practical work in the High School Victory Corps, whose creation it sponsored. A greater inducement was provided, however, by the high wages offered to youth with little or no training or with opportunities for training on the job. The exodus of young people from school both on reaching the normal limit of compulsory attendance and before became so serious that a nationwide "Go to School Drive" was launched in 1943 by the U.S. office of education, the War Manpower commission, the children's bureau of the department of labour, state and local education authorities, professional organizations and voluntary groups like the National Congress of Parents and Teachers. It was estimated that at least 3,000,000 boys and girls between the ages of 14 and 18 left school without completing their secondary education. The enrolment of 6,714,000 in 1940-41 dropped to 5,760,000 in 1943-44. The situation was recognized as serious as much from the point of view of national interest as that of individual well-being. The "Go to School Drive" urged youth to take advantage of educational opportunities as a preparation for citizenship and for service to the nation. All interested groups were pressed to recognize the obligation to safeguard the physical and intellectual development of youth. The Educational Policies commission stated that high school attendance until graduation was the best contribution to the war effort which school-age youth could make. It was generally agreed that part-time work in war occupations should be combined with regular schooling until graduation. The ultimate effects of the exodus from school were expected to be most serious since large numbers would be inadequately prepared for life and, without training, might be forced into the ranks of the unemployed in the postwar years.

The major issues were clear but there was some concern lest the need of providing curricula and courses suited to the abilities and aptitudes of those students who had academic interests might be ignored. The question of the relation of the secondary school curriculum for such students to the proposed reorganization of college courses was not considered. The results of the eight-year experiment undertaken by the Progressive Education association in 1930 and published in five volumes seemed to indicate that students with the necessary ability could succeed in college no matter what subjects they had studied in high schools. (See W. Aikin, The Story of the Eight-Year Study: Conclusions and Recommendations, 1942.)

Adjustment of Youth.—The early years of the depression had focused attention on the problems of the educational and social adjustment of youth which continued to occupy an important place in all discussions of educa-

tional reconstruction through both the depression and World War II. It remained, in fact, one of the crucial issues in the postwar years. Approached first as a problem of the adjustment of youth, it began to be recognized as part of the whole problem of economic policy for the postwar years. Attention had been drawn to the situation by the thousands of youth who were roaming the country and becoming "young tramps" in the early '30s, by the rapidly increasing enrolments in the high schools without the adequate development of curricula adapted to the needs and interests of youth and by the millions of out-of-school youth who were not usefully employed. It was feared that the age group from 16 to 24 which constituted about onesixth of the total population might, if left without guidance and employment, become a menace to the nation and its democratic institutions through a sense of disappointment and frustration and a feeling of "not being wanted." The Advisory Committee on Education, appointed by President Roosevelt, in referring to this situation stated that "The great problem is one of facilitating the flow of young people from the schools into the various occupations among which they should be distributed as adults." The solution of the problem, insofar as youth were concerned, demanded suitable general education, guidance and counselling, vocational preparation and placement.

The major social agencies for the preparation of youth were, in the opinion of this committee, the high schools which should develop a greater variety of types of programs to meet the needs of those students who did not intend to go to college. In 1935-36 the enrolments in the fourth year of the high schools had ranged from 42% to 75% of the enrolments in the first year. While these figures indicated defects in the holding power of the high schools, the economic causes of elimination from school were not ignored. The committee favoured the development of a "core curriculum" to be combined with guidance and preparation for occupations. To meet the latter need, the committee recommended the organization of an occupational outlook service to provide the information needed to enable youth to make a choice of occupations and training. Such service would involve the co-operation of the federal and local governments, industry, labour, schools and colleges and public employment offices. The public high schools could not undertake to give a wide range of specialized training, since there were between 20,000 and 25,000 occupations. They could, however, provide training in basic skills and general knowledge useful to a variety of occupations as the basis for specialized training by industry. For this purpose the committee urged the revival of intensive apprentice training through cooperation between schools and industry and under careful safeguards.

Relief Agencies.—Civilian Conservation Corps.—The first measure to meet the needs of youth unemployed as a result of the depression was the establishment of the Civilian Conservation corps (q.v.) "for the relief of unemployment through the performance of useful work, and for other purposes." Provision was made for the selection of youths between 17 and 21 who were unemployed and in need of work and whose families were in need of relief. Each enrollee was paid \$30 a month, of which \$15 went to dependents, \$7 was retained in a savings fund and \$8 paid for current expenses. The average cost per enrollee was \$1,200 a year. In the nearly ten years of its existence (from 1933 to 1942) some 1,400 camps were established in different parts of the country and enrolled nearly 3,000,000

youth. As first conceived, the program of the CCC was intended to provide work relief and to conserve and develop natural resources. Before the end of the first year it was recognized that the agency could make an important contribution to the educational and social development of the enrollees. Large numbers were drawn from the underprivileged groups; 62% came from rural areas with inadequate school facilities; one-third had not completed elementary education and few had had any vocational training. The chief weakness of the CCC program was that its aims and functions had not been integrally planned from the start. Another defect arose from the fact that the administration of the camps was placed under army reserve officers who operated under war department regulations, while the staff included foremen and skilled workers responsible for the work projects and educational advisers who held subordinate positions and whose work was too often included as an afterthought. Physicians, dentists and chaplains gave part-time service in the camps. It was not until the CCC was assigned under the reorganization plan, 1939, to the Federal Security agency that a coordinated program was made possible along the lines of President Roosevelt's view that "its major purpose is to promote the welfare and further the training of the individuals who make up the Corps, important as may be the construction work which they carry on so successfully."

It was generally recognized that the contribution of the CCC was valuable, if only for the improvement of the health of the enrollees and the development of certain habits of living under camp conditions in communities of about 200 in each camp. The primary purpose of the agency—conservation and construction work—contributed to improvement in skill and efficiency. It was only by gradual stages that it began to be realized that the CCC could become an important agency for the fullest development of the enrollees in general education, health and physical fitness, and vocational preparation, as well as for education in citizenship. The camps themselves provided opportunities for vocational training which far exceeded the range required for conservation and construction work.

Civilian Conservation corps members trained to operate field radios during forest fires



When it was realized that the CCC as an agency contained the idea of a new type of educational institution, its primary purpose as a relief agency was dropped. There were, in fact, some who saw in the CCC a form of secondary education for youth who could not profit from the existing types. After the new concept of the possibilities of the CCC was realized, little time was left to put it into practice, since the agency was dropped in 1942. Nevertheless, much was learned from the experiment, especially the importance of work experience as a medium of education for certain groups of youth. Much was also learned which would have contributed to the improvement of its administration and to better adjustment of the enrollees to life after leaving the camps. The chief criticisms which may have led to the dropping of the CCC were centred not so much in its work as in the fact that the federal government had entered directly into the field of education and by-passed both the state and local education authorities.

National Youth Administration .- One of the causes of inequality of educational opportunity-inability of students to remain in school or college for economic reasons -had become more aggravated during the depression years. The first measure to provide relief in such cases had been begun in 1934 under the Federal Emergency Relief administration with appropriations of \$13,500,000 for the fiscal year 1934-35 for the purpose of giving aid to students between the ages of 16 and 24 who otherwise could not continue their education. In 1935 the National Youth administration (q.v.) was created as an autonomous agency under the Works Progress administration to administer such grants to students for "relief, work relief, and employment" while engaged in a regular program in high schools, colleges or universities. The amount of aid was limited to \$6 a month to high school students, \$15 to college students and \$25 a month to graduate students in return for work in the schools or colleges or work of value to the community which would otherwise not be done. The students so aided engaged in a great variety of activitiesclerical, maintenance and repair, research, adult education, community health work and co-operation with state and local agencies engaged in public health, recreation, education, libraries, museums, social work and agricultural extension. In 1939 the NYA was transferred under the reorganization plan to the Federal Security agency (q.v.) with an enlarged program, as defined by President Roosevelt, "to extend the educational opportunities of the youth of the country and to bring them through the processes of training into the possession of skills which enable them to find employment.... Work projects ... have been merely the process through which its major purpose was accomplished."

Under this definition of its functions, which amplified the language of the Emergency Appropriation act and authorized the NYA to use its funds to provide training as well as part-time work to needy young persons, a number of resident and local nonresident centres were established in which the students devoted half of their time to production or service projects and the maintenance of the centre, and half to attendance at classes. The NYA thus embarked on a program of vocational schools which, even though state and local teachers were employed, were federally administered and controlled. In 1940-41 the NYA received an appropriation of \$26,240,616, of which \$12,-509,161 was spent in aid to students in 28,000 public, parochial and private high schools, and \$13,731,455 in aid to college and university students; an additional sum of \$100,000 was appropriated to aid Negro students who, because of lack of facilities in their own states, were enrolled in colleges and universities of other states. Some 450,000 students were aided under this program.

The NYA, like the CCC, directed attention to the value of combining work experience and schooling. It also pointed to the need of co-ordinated efforts under national leadership to attack the problems of youth as a matter of national concern. Criticism of the NYA, like that of the CCC, was not concerned primarily with its program but with federal encroachment and the threat to the established principles of federal-state relations in the field of education. The value of the program was recognized, but it was strongly felt that the solution of the problem of youth adjustment should be undertaken by all agencies concerned—public and private, federal, state and local, and social and educational.

American Youth Commission.-In 1935 the American Council on Education in A Proposal for the Development of a Comprehensive Program for the Care and Education of American Youth, had called attention to the need for a nation-wide study of the problems of U.S. youth. It was recognized that these problems were not due wholly to the depression but resulted also from social and economic changes which antedated the crisis and were not merely temporary. To keep up with the tempo of modern life, educational programs had to be revised and educational institutions had to deal more adequately with the problems than they had done in the past. The conditions arose from increase of leisure time, growing specialization and mechanization of vocational opportunities, growing interdependence of communities and the need of greater understanding and sympathy between groups, the place of radio and motion pictures in determining interests, attitudes and standards of taste and conduct, the declining influence of the home and the church, the shifting of mores and of ethical standards and the apparent increase in crime. The council found neither a consistent plan for dealing with current problems nor an agency equipped to develop such a plan and put it into effect. A multiplicity of welfare agencies both public and private existed, but there was a lack of co-ordination for securing effective results.

The American Council on Education, with a grant of \$500,000 from the General Education board, organized the American Youth commission in Sept. 1935, consisting of 16 men and women with Newton D. Baker as chairman and Owen D. Young as vice-chairman. The general purposes of the commission were to consider the needs of youth between the ages of 12 and 25 and to develop a comprehensive program for their care and education; to investigate how the needs of youth were being met by existing agencies; to recommend the most effective programs for solving the problems of youth; and to popularize and promote desirable plans of action through conferences, publications and demonstrations of promising procedures.

The commission through its staff studied more than 300 national voluntary agencies working with young people, conducted surveys to discover the attitudes of youth on education, employment, recreation, war, wages, voting, relief, religion and group relations, investigated the literature on youth problems and conducted nearly 200 surveys of youth in different parts of the country. A flood of light was thrown on the situation by the Maryland Youth survey, the results of which were published in 1938 in Youth Tell Their Story. Other studies which emerged from the commission's investigation dealt with secondary education, occupational adjustment, federal support of education, education for family living, vocational and technical education and education in the CCC camps. Experiments

were conducted in guidance, placement and occupational adjustment of young workers; in some experiments the cooperation of schools, industry and social welfare groups was secured. Reports of the progress of the commission's work were published in a monthly Bulletin and the results of special investigations in a series of books of great value to all concerned with the problems of youth. The major publications were the following: Youth Work Programs; Youth, Family and Education; Guideposts for Rural Youth; Matching Youth and Jobs; Equal Educational Opportunity for Youth, A National Responsibility; Youth Tell Their Story; Color, Class and Personality; Growing Up in the Black Belt; Youth in the CCC.

A pamphlet published in 1939 under the title A Program for American Youth contained the recommendations of the American Youth commission and the American Council on Education. The fact was emphasized that the gap between the number of jobs for youth and the number who needed and wanted jobs could not be closed without aid from the federal government. Employment in some form of service under public auspices should be provided for young people more than 16 who did not desire to remain in school and could not secure jobs in private enterprise. Up to the age of 16 they should be required and enabled to attend full-time schools. The years between full-time school and full-time job should be bridged by part-time schooling and part-time employment, a device which experiments had proved to be successful. The educational aspect of public work for youth-superintended by competent leaders and planned to assist the worker in discovering his own aptitudes and abilities so that he could enter private employment in a field where he could be most useful and successful was emphasized.

The general report of the American Youth commission, Youth and the Future (1942), dealt with the whole range of youth problems as might be gathered from the following chapter headings: Youth unemployment as a continuing problem; experience with youth work programs; work programs for youth in the future; relations between schools and youth work programs; the problem of full employment; the needs of youth; education; occupational adjustment; the use of leisure time; marriage and the home; health and fitness; delinquency and youth care; citizenship; action in communities; action in state governments; the place of the federal government; responsibility for planning in relation to action; and the meaning of life.

Higher Education.—The crises of the decade 1937-46 seriously affected the status and progress of higher education in the United States. In 1936 there had been a slight increase over the previous year of 6% in the enrolments in colleges and universities and of 9% in junior colleges. This increase was maintained until the outbreak of World War II. A more serious problem than that of enrolments, however, was the reduction in the income from investments of endowments and in the number of gifts. The increased enrolments were due largely to the grant of student aid under the National Youth administration. The shrinkage of income meant, on the one hand, curtailment of staffs, particularly among the younger members, despite the larger number of graduate students and Ph.D.'s available, and on the other, made it impossible to increase salaries and in many institutions compelled a reduction. These conditions led to proposals for federal aid, without leading, however, to definite action.

The outbreak of the war in Europe had an immediate

effect on enrolments in institutions of higher education owing to uncertainty in the political situation, the increased opportunities for employment and expectation of the draft. Enrolments in 1940 were practically the same as in 1939; in 1941–42 there was a definite decrease of nearly 9% as compared with 1940–41; the heaviest losses took place in tax-supported institutions and in independent teachers colleges. The distribution of students in the various fields of study showed a marked difference; the medical schools had the largest enrolments on record and engineering schools and scientific departments generally were attended by larger numbers; law schools were the worst hit by reduction in enrolments.

In a report on the Effects of the War Upon Colleges, 1943-44, the U.S. office of education announced that in the fall of 1943 the total enrolments were 1,120,300 or 18% less than in 1939. There were twice as many women as men enrolled compared with two men to three women in 1939-40. The median age had dropped from 18 years 11 months in 1940 to 17 years 10 months owing to the accelerated programs and the admission of students from the junior high school year; the median age for women in 1943-44 was 18 years 4 months. Enrolments in graduate schools were 30% less than in normal schools.

In 1944 the committee on education of the house of representatives appointed a committee to study the effects of the war on higher education. The report of the study, conducted under the direction of Dr. Francis J. Brown, indicated the serious financial condition of colleges and universities caused by decreased enrolments and the discontinuance of the army and navy programs discussed below. The committee recommended federal aid of \$25,000,000 annually during the emergency, the grants to be made to institutions when their enrolments dropped to 60% of normal. The recommendations approved by the Association of American Colleges were incorporated in a bill, H.R. 3116, but no further legislative action followed.

The uncertainty as to the future of higher education which had begun during the depression years became still more aggravated after Pearl Harbor. For nearly a year there was no clear statement of policy from the government either on the status of students of draft age or on the use that might be made of colleges and universities for the war effort. The leadership in higher education was assumed by the American Council on Education, established during World War I to serve as a co-ordinating agency in this field. Two weeks after Pearl Harbor the Planning and Executive board of the council recommended the adoption of accelerated programs by colleges and universities and emphasized the importance of continued education for able students to meet the future demands for physicians, dentists, engineers and other professional workers. On Jan. 2, 1942, the council held a conference in Baltimore, Md., attended by representatives of 1,000 institutions of higher education. The keynote for education generally was sounded in a message from President Roosevelt:

We have one great task before us. That is to win the war. At the same time it is perfectly clear that it will be futile to win the war unless during its winning we lay the foundations for the kind of peace and readjustment that will guarantee the preservation of those aspects of American life for which the war is fought. Colleges and universities are in the particularly difficult position of balancing their contributions to these two ends. I am sure, nevertheless, that the leaders of our colleges and universities can be depended upon to find the wisest solution for the difficult problem of how to make this two-fold contribution. I am anxious that this national crisis

shall not result in the destruction or impairment of those institutions which have contributed so largely to the development of American culture.

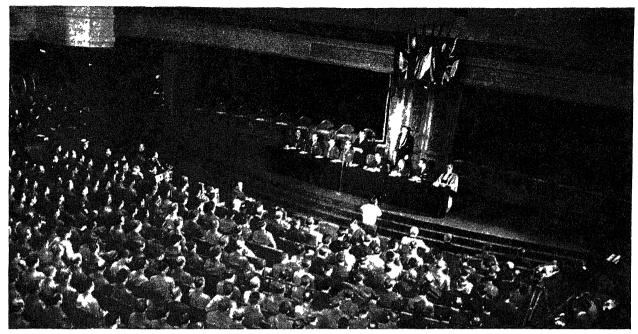
The conference endorsed the policy of acceleration to permit abler students to carry heavier programs and, with shorter vacations and the use of the long summer vacation, to graduate in three years or less. The policy was generally adopted by all colleges and universities, including women's colleges which were at first inclined to reject it. The problem of those students who relied on working through the summer vacation to pay their college expenses was met by a congressional appropriation of \$5,000,000 to be used for student loans to cover tuition and keep with a maximum of \$25 per month to each student; the loans were to be repaid at 21/2% interest. Nothing was done to improve the financial situation of the colleges and universities with serious effects upon the instruction staffs who carried heavier teaching loads for longer terms and with little or no additional pay. The burden on the institutions was further increased by the withdrawal for war work of teachers of mathematics, sciences and technical subjects, and of others into the armed forces.

Uncertainty about government policy continued, and a second conference was held in Baltimore on July 15–16, 1942. The conference deplored the failure of government to present an adequate and co-ordinated plan for the effective use of institutions of higher education for winning the war. The lack of plan impeded the flow of highly trained manpower essential to victory in a long war. It was pointed out that, while only 12% of the selectees were college graduates, 80% of those selected for officer training were drawn from this group. Despite uncertainties, all institutions made important contributions to the war effort through morale-building and through research.

The situation became clearer in 1943, when the war and navy departments entered into contracts with 479 institutions to give instruction in some designated branch of the armed services-engineering, aviation cadets, WACs, basic training, personnel psychology, language training, premedical studies, meteorology, chemical warfare, basic medical sciences and medical, dental and veterinary training. The candidates for the army specialized training programs (ASTP) were enlisted men selected by classification and personnel officers. The basic program included English, history, mathematics, physics and chemistry in addition to specialized studies. On completing the courses students were recommended for admission to officer candidate schools or were assigned for immediate service. A similar system was established by the navy in the V-12 courses. At the same time a more liberal Selective Service policy was adopted for students in preprofessional and professional courses, such as agriculture, forestry, pharmacy, optometry and in internships, provided they received certificates of competence from the institution attended and showed promise of completing their studies successfully by July 1, 1945. In February 1944 the war department announced that the ASTP would be partially discontinued; only 35,000 out of 145,000 students were retained in medicine, dentistry and engineering, and more than 300 institutions were affected. Some compensation was provided by the institution of a new examination by the army and navy for high school graduates, who were to be admitted to college until they were drafted.

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Despite the difficulties and uncertainties of the decade, it stood out as an important era of fruitful discussions on the future of college education and the organization



Members of the U.S. armed forces studying at the Sorbonne in Paris, shown in the grand amphitheatre during an address by U.S. Ambassador Jefferson Caffery in 1945. They studied the French language there under the army educational program

of the college curriculum. The discussions arose out of general dissatisfaction with traditional practices, the tendency toward early specialization and the need of redefining the concept of liberal education in accordance with modern needs. In 1939 the National Society for the Study of Education devoted its Thirty-Eighth Yearbook, part II, to a consideration of General Education in the American College, which attacked the existing subject-matter organization of the curriculum and advocated the introduction of general courses in which materials from several of the conventionally separated fields would be brought together. In 1938 the Carnegie foundation published the results of the study of secondary and higher education in Pennsylvania in a report on The Student and His Knowledge by W. S. Learned and Ben D. Wood. The conclusions reached in the report were that college students did not acquire enduring and usable knowledge as a result of the quantitative system of points, units and credits, and that a basic pattern of education adapted to the capacities and abilities of the students needed to be formulated.

The war years stimulated widespread discussions of plans for reorganization of the curriculum. Among critical works the outstanding were Education for Freedom by Robert M. Hutchins and Liberal Education by Mark Van Doren, 2 strong proponents of a curriculum based on the study of the 100 best books, and The Teacher in America by Jacques Barzun, who presented a general criticism of higher education. The emphasis placed on the study of the sciences and technological subjects, as well as a shift of student interest to the social sciences during the depression years, turned the attention of educators in another direction. The approach was broadened to a consideration of the meaning of liberal education and particularly of the place of the humanities in higher education.

In 1943 the Association of American Colleges published the report of its Committee on Restatement of the Nature and Aims of Liberal Education, in which a program of studies adjusted to contemporary needs was recommended but without losing sight of enduring human needs. As a result of this report and the interest of the American Council of Learned Societies in the preservation of the humanities, national and regional conferences were held, and committees were appointed in a large number of colleges and universities to discuss the problems of the college curriculum.

Although the report of the Harvard university committee on General Education in a Free Society (1945) attracted widespread attention, it represented the trends of the proposals for the reorganization of college courses in many other institutions and already in practice in Columbia university for many years preceding World War II. In general the recommendations tended to limit the traditional elective courses and to require that in the first two years of the college course students should devote the major part of their time to a program consisting of humanities, social studies and science and mathematics as areas of general education. The committee appointed to study the reform of the curriculum at Yale university suggested three plans: (1) the standard plan to be followed by about 85% of the undergraduates and to include three basic requirements-English, systematic thinking and modern languages-and six distributional requirements in different areas of study; (2) the scholars or house program for selected students who had completed the standard plan; and (3) an experimental plan in integrated and controlled education in the first two years and in one of five major fields in the last two years to be elected at the beginning of the freshman year. The New Plan of Study in the Liberal Arts and Sciences adopted by Princeton university, Princeton, N.J., provided for an organic union between "general education" of underclass years in the major fields of learning, the divisional concentration in the middle years and the departmental concentration of upperclass years. This tendency to reduce the number of electives, to provide programs of general education and to postpone specialization was marked in most colleges of the United States.

The general introduction of the new programs, except on an experimental basis, was delayed by the large influx of veterans into the colleges in 1945–46. The educational provisions of the Servicemen's Readjustment act, 1944,

or the G.I. Bill of Rights, made it possible for any honourably discharged veteran whose education had been interrupted to continue his education or training for one year or less, a period which would be extended on the recommendation of the institution attended. The plan, whose supervision was placed under the administrator of Veterans' Affairs, provided originally for the payment of fees up to \$500 a year and subsistence allowances of \$50 a month for a single veteran and \$75 a month for a married veteran; the allowances were later raised to \$65 and \$90 a month respectively. In April 1946 it was estimated that 394,557 were enrolled in 1,686 approved institutions of higher education; the number rose to 714,477 in late 1946. The most serious problems raised by the return of veterans were the provision of housing accommodations and the inability of colleges and universities to accept all applicants. In a report of May 19, 1946, to President Truman by John W. Snyder, reconversion director, it was estimated that 2,080,000 persons, including 970,000 veterans, would wish to enter colleges in Sept. 1946 but that only 1,000,000, including 690,000 veterans, could be accommodated. It was also expected that high school graduates of 1946 would find serious difficulties in securing admission to colleges. The difficulties which began in 1946 would continue until 1950, when the number of veterans would begin to decline significantly.

The spectacular part played by science and technology in winning the war directed attention to the part that these fields of study could play in promoting welfare and progress in peace as well as for national defense. In 1945 Dr. Vannevar Bush, director of the Office of Scientific Research and Development, published the report of a committee appointed at the request of President Roosevelt. The committee was requested to report on the contributions made to scientific knowledge during World War II, on continuing the work done in medicine and related fields, on the selection and training of talent in scientific research and on government aid for research activities by public and private agencies. In the report, Science, The Endless Frontier, Report to the President on a Program for Postwar Scientific Research, the committee recommended federal aid for scientific education and research and the creation by congress of a National Research foundation to administer the funds to be appropriated. Several bills were presented in congress to carry out the recommendations of the Bush committee, but without any legislative action.

International Cultural Relations.-International cultural relations formerly had been conducted in the main by voluntary organizations. As a member of the Pan American Union (q.v.) the United States had for a long time participated in inter-American relations officially. In 1939-40 the government began to exchange students with Latin-American republics under the Buenos Aires Convention for the Promotion of Inter-American Relations, 1936. The active promotion of such relations with the Latin-American republics was undertaken as a part of the "good neighbour policy." In 1938 it was decided to create the division of cultural relations in the department of state to serve as a clearinghouse and co-ordinating agency for international cultural relations. The division was established to have "general charge of official international activities of the department with respect to cultural relations." These activities included the exchange of professors, teachers and students; co-operation in music, art, literature and other intellectual and cultural fields; the

distribution to libraries of representative works of the United States; supervision of government participation in international broadcasts; and the improvement and broadening of cultural relations with other countries. It was definitely specified that the division was not to be a "propaganda" agency. The outbreak of World War II limited the activities of the division to the western hemisphere. Conditions arising out of the war led to an expansion of these activities in two directions: (1) the provision, out of funds provided by the U.S. and Chinese governments, to assist Chinese students stranded in the United States and the establishment of a system of exchange of professors and technical experts with China; and (2) the extension of financial aid to the six non-sectarian colleges established in the near east by U.S. citizens.

The name of the division of cultural relations was changed first to division of science, education and art and later to division of cultural co-operation. In Jan. 1946 the division ceased to exist and its functions were distributed among the five divisions of the office of international information and cultural affairs. Divisions of the office included international press and publications, international motion pictures, international broadcasting, international exchange of persons and libraries and institutes, in addition to the office of the director and the interdepartmental committee on scientific and cultural co-operation.

At the end of 1945, Sol Bloom introduced a bill (H.R. 4982) superseding a bill introduced earlier in the year "To enable the Department of State more effectively to carry out its responsibilities in the foreign field by means of (a) public dissemination abroad of information about the United States, its people and its policies, and (b) promotion of the interchange of persons, knowledge, and skills between the people of the United States and the peoples of other countries." The bill, which would extend the activities of government in international cultural relations to all parts of the world, was reported favourably by the committee on foreign affairs, but no action was taken by the 79th congress.

The bill (S. 1636) introduced by Senator J. W. Fulbright in Nov. 1945 to permit the secretary of state to enter into agreements with foreign governments to use credits acquired by such governments from the sale of surplus property (lend-lease), for the exchange of students was passed by congress. The agreements entered into with the foreign countries were not to be in excess of \$20,000,000 in any one country nor of \$1,000,000 annually at the official rate of exchange.

In 1941 there was established within the Office for Emergency Management the Office of the Coordinator of Inter-American Affairs, later called the Office of Inter-American Affairs, to strengthen solidarity and understanding among the American republics. One part of the work was devoted to commercial and economic relations; the other to the promotion of the effective use of governmental and private facilities in such fields as the arts and sciences, education and travel, the radio, press and motion pictures. On the cultural side the office promoted the exchange of educators and co-operative efforts through the improvement of textbooks, visual aid and other teaching materials; it contributed to the improvement of methods of teaching English and to the advancement of standards of living through the development of mass literacy, health and vocational proficiency, and the reorganization of elementary and secondary education and of normal schools. To carry out the educational objectives the Inter-American Educational Foundation, Inc., was created in 1943; it entered into contracts with some 12 Latin-American countries which requested expert advice for the improvement of some particular aspect of their educational systems. In each case the North American experts co-operated with experts in the Latin-American countries which invited them.

Indirectly another method of familiarizing educators with North American practices was initiated in 1943 when the Inter-American School Service was created under the American Council on Education. Assisted by funds from the federal government, the organization was established to assist and advise North American sponsored schools in Latin-America.

In 1941 the department of state began to appoint cultural relations officers or cultural attachés to embassies and legations in Latin-American countries. After the end of the war cultural attachés were appointed to other countries as well.

The entrance of the government of the United States into the field of international cultural relations supplemented rather than displaced the activities of voluntary private agencies in this field. In all their activities the department of state and the Office of Inter-American Affairs co-operated with such organizations as the American Council on Education, the American Council of Learned Societies, the American Library association and the Institute of International Education.

* * *

In addition to the general reorganization of college studies, World War II and the prospective peace stimulated great interest in three areas of learning-foreign languages, international studies and the sciences. The need by the armed forces of experts in different parts of the world stimulated the provision of courses of instruction in languages other than the few normally taught in colleges and universities-Burmese, Japanese, Korean, Malay, Persian, Russian, Thai and many others. To meet the demands, experiments of various kinds were introduced in the methods of language instruction. Instruction in the respective languages was supplemented by "area studies" or studies of the culture and civilization of the people. It was expected that both experiments would have an effect on the study of languages in the postwar period.

In a number of institutions (Columbia, Illinois, Pittsburgh, Princeton, Stanford, and Yâle, for example) institutes and schools were established in international affairs and relations, some general in character, some devoted to a particular region of the world. In other institutions there was an extensive development of courses in these areas

(For statistics concerning U.S. institutions of higher learning, see Universities and Colleges.)

U.N.E.S.C.O.—Private lay and professional organizations played an important role in securing the establishment of an international agency for education. Plans for the creation of such an agency were discussed first in London in 1942 by the Conference of Allied Ministers of Education and in a report on Education and the United Nations, published in 1943 by a joint commission of the Council for Education in World Citizenship and the London International assembly. The plans aroused widespread interest in the United States and were publicized by such organizations as the Commission to Study the Organization of Peace, the Educational Policies commission of the National Education association, the Liaison

Committee for International Education, the Universities Committee on Post-War International Problems, the American Association for an International Office of Education and the United States Committee for Educational Reconstruction. Largely through the efforts of these and other organizations the establishment of an international agency for education was assured by the addition of the words "educational, scientific and cultural" in the United Nations charter wherever reference was made to "social, economic, and humanitarian affairs." The charter provided for the creation of the international educational, scientific and cultural organization as a specialized agency of the Economic council.

In Nov. 1945 a conference, attended by delegates from 43 nations and an observer from Venezuela, was held in London and in 2 weeks the constitution of the United Nations Educational, Scientific and Cultural organization, based essentially on a draft constitution prepared in the United States, was adopted.

The constitution was to come into force when accepted by 20 of its signatories.

A preparatory commission was appointed to make the necessary arrangements for the first session of the general conference of U.N.E.S.C.O. At the end of July 1946 President Truman signed the joint resolution adopted by congress making the United States a member of U.N.E.S.C.O.

(See also Census Data, U.S.; Children in World War II; Liberalism; United Nations.)

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Great Britain

To look back, at the end of the decade 1937-46, to British education in 1937 was to experience a mingled sense of remoteness and familiarity. The air of remoteness was due to three facts: the remarkable change in the public attitude towards education which the years 1940 to 1946 had brought about; the change and expansion (still in its infancy at the end of the decade, but already marked) in the concept of education; and the drastic remodelling of the public system of education in England and Wales. That of familiarity was due mainly to the fact that administration and practice had not yet caught up with legislation, and so most of the defects in the public service of education already obvious in 1937 remained largely unremedied ten years later.

In 1937, legislators and administrators were congratulating themselves that "a definite program of advance on many fronts" had been initiated. The Education act, 1936, had provided for the raising of the age of compulsory education from 14 to 15 years, though with exemption at 14 for "beneficial employment." The reorganization of the public elementary school into separate primary (5–11 years) and senior (11–14) divisions had been given fresh impetus by this act, and some fine senior schools were being built or projected. A national campaign for physical education, brought to a climax in July by the Physical Training and Recreation act, was in full swing. A nation-wide modernization of technical education involving a capital expenditure of \$48,000,000 was being planned.

Despite these signs of progress, the teachers were uneasy and apprehensive. The buildings in which many had to work were out-of-date and not infrequently in bad repair. Their pay was poor and their status in society equivocal. Thousands of classes were far too large. The secondary school curriculum had, in the endeavour to meet modern requirements, become a congested mass of unrelated subjects. The clauses in the 1936 act exempting children from attendance at school after 14 if they found "beneficial employment" were felt to be a retrograde step.

These and other complaints were giving rise to a feeling, as yet largely inarticulate, that nothing less than a complete reorganization of the statutory system of education was necessary. The publication in Dec. 1938 of the report of the consultative committee of the board of education on Secondary Education, with Special Reference to Grammar Schools and Technical High Schools (the Spens report) gave considerable impetus to this feeling. This, like the committee's earlier report on The Education of the Adolescent (the Hadow report, 1926), recommended that all varieties of postprimary education should be regarded as secondary education, and suggested, more controversially, that this education should be conducted in three main types of secondary school: grammar, technical and modern-thus opening a dispute which was still continuing at the end of the decade.

But by early 1939, reform projects were being overshadowed by the gathering threat of war. Schoolchildren were doing gas mask and evacuation drills, administrators preparing estimates for air raid shelters. On Sept. 1, 1939 -the day the school-leaving age was to have been raised to 15-the Germans invaded Poland, and Britain began to evacuate children from some 40 large centres of population. Within 11 days, 750,000 schoolchildren and many thousands of younger ones were transported into rural districts. As no bombing occurred, great numbers quickly returned home; by Christmas more than half were back. During these months the public system of education was gravely disorganized, but by the superhuman efforts of administrators, teachers and voluntary helpers order was restored. When heavy bombing began in Sept. 1940 the educational services were generally so well prepared that they could evacuate or improvise successfully at a moment's notice.

Wartime Movements.—Evacuation continued until 1945. It was never more than a limited success; British parents could not endure lengthy separation from their children. But it conferred some lasting benefits. It revealed the squalor in which the lowest strata of society were living, and thus woke the public conscience to acute concern about housing, health and education. It introduced many thousands of children and teachers to health-giving country life. It compelled teachers to think out new objectives and methods, and so did much to reorient the attitude of many towards the curriculum. It started the demand for "wartime nurseries" (of which 1,500 were set up), and thus led to widespread and intensified interest in nursery education. It was a main cause of the expansion of the school meals service which began in 1941 and in 5 years increased tenfold (from 3 to 30) the percentage of children receiving a nourishing midday meal at school. To this "off the ration" meal must be largely attributed the continued health and vitality of British children throughout

While the authorities were coping with the chaos caused by evacuation, three movements of profound social significance had their birth. In Nov. 1939 the government launched the "service of youth" by calling into partnership the local education authorities and the national voluntary youth organizations and offering generous money grants in aid of their joint efforts to provide educational, social and recreative facilities for young people beyond compulsory school age. Within three years an organized network of provision had covered the country, and the youth service thus created was by 1946 an integral part of the public system of education.

In Dec. 1939 the central advisory council for adult education in the British armed forces was set up by the universities, the local education authorities and voluntary bodies to provide lecturers and arrange other educational facilities for service men and women. In 1940 the government gave the council official recognition and financial support. In 1941 the war office supplemented this voluntary effort by including in the training of all soldiers a weekly compulsory discussion hour and setting up the army bureau of current affairs (A.B.C.A.) to supply fortnightly discussion pamphlets on military and civic topics. In the following year a three-hour-a-week compulsory educational program was tried out in some home commands. In 1944-45 a comprehensive scheme for education during the demobilization period was worked out for all three combatant services, and provided the pattern for peacetime provision. These wartime efforts undoubtedly stimulated in many thousands of men and women a desire for education not felt by them before.

In Dec. 1939 the president of the board of education asked the Pilgrim trust if it would make a grant towards the maintenance and encouragement of music and the arts during wartime. The trust gave £25,000 and in April 1940 the chancellor of the exchequer agreed to supplement this up to a maximum of £50,000. Thus came into being the council for the encouragement of music and the arts (C.E.M.A.), which for five years carried good music, drama and exhibitions of pictures into innumerable districts, both urban and rural, where such had never been heard or seen before. The response everywhere was enthusiastic and appreciative, and fully justified the continuance in peacetime of the work of C.E.M.A., which in 1945 received enhanced status as the arts council of Great Britain, a body supported out of public funds.

A complex of discontents brought to the surface mainly by evacuation, and including, significantly, widespread anxiety on the part of parents about their children, gave rise early in the war to a demand-which spread rapidly -for radical and far-reaching reforms in the public system of education. The board of education was not slow to take cognizance of this, and in 1941 circulated to interested bodies a comprehensive questionnaire. During the following 18 months or so it received in answer more than 100 detailed memoranda. Most of these were published in pamphlet form or noted in the press, and public interest was further aroused and focused by numerous public meetings held all over the country, notably by the Council for Educational Advance, formed in 1942 by the Trades Union congress, the National Union of Teachers, the Workers' Educational association and the Co-operative society.

The Education Act, 1944.—R. A. Butler, who became president of the board of education in July 1941, immediately entered into discussions with the numerous interests concerned with public education in England and Wales, and exactly two years later, after prolonged negotiations conducted by him with consummate skill, presented to parliament the government's policy for postwar

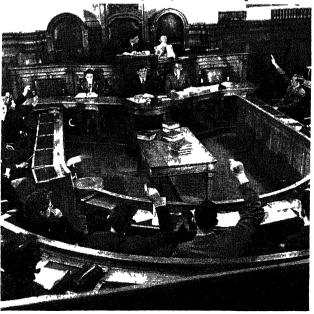
reform, in a White Paper entitled Educational Reconstruction. In Dec. 1943 he introduced into parliament a bill to reform the law relating to education in England and Wales, and on Aug. 4, 1944, this became law as the Education act, 1944.

This great act, the bulk of which came into operation on April 1, 1945, remodelled the public system of education by abolishing the previous division into elementary and higher education and organizing it in three progressive stages: primary (to age 12), secondary (12-18) and further, from the end of compulsory full-time education onwards; and by making it the statutory duty of the local education authorities to secure the provision of efficient education throughout the three stages (previously the provision of elementary education only was a duty). The president of the board of education, who could only "superintend," was made a minister with power to direct and control the authorities. The act raised the age of compulsory full-time education, first from 14 to 15, and later to 16, as soon as practicable. It established a system of compulsory part-time education (one day a week) up to 18 for all not in full-time education.

Tuition fees were abolished in primary and secondary schools maintained by the public authorities. All private schools were to be registered and inspected. Religious worship and instruction were made compulsory (though parents might contract out) in all maintained schools. A statutory duty was laid on parents to see that during the period of compulsory education (5–15) their children should receive efficient full-time education suitable to their "age, ability and aptitude."

To implement the act fully was expected to take years. Priority had been given to raising the school age to 15 and expanding the school meals service. Until permanent building could begin, prefabricated units were being used to make good war damage and supply the required extra accommodation. An emergency scheme of training for teachers was launched in 1945; it was expected to provide 36,000 in 3 years. Outstanding among curricular problems was the content of secondary education for the 80% of children who formerly received an elementary education only.

A British youth club in which members conduct mock town councils and are trained for future participation in local government



The Education (Scotland) act, 1945, applied the British government's policy to the Scottish educational system. The government of Northern Ireland published in Dec. 1944 a White Paper, Educational Reconstruction in Northern Ireland, proposing reforms comparable with those effected in Great Britain, and in Sept. 1946 the text of an education bill. In all the British dominions the spirit of educational reform was abroad at the end of the decade, notably in Australia and New Zealand, where large-scale programs were projected. Under the Colonial Development and Welfare act, 1940, much attention was being given to the development of education in the British colonies. (H. C. D.)

British Universities.—British universities in 1946 were faced primarily with the same problems as in 1917, but in a more acute form. Long before 1936, the 12 degree-giving universities in England and Wales—Birmingham, Bristol, Cambridge, Durham, Leeds, Liverpool, London, Manchester, Oxford, Reading, Sheffield and Wales—and the four Scottish universities, Aberdeen, Edinburgh, Glasgow and St. Andrews, were being increasingly harassed by those problems of accommodation and finance and, to a lesser degree, of staffing, which inevitably arose as the numbers of students increased.

What was true of the universities was no less true of the university colleges of Exeter, Hull, Nottingham and Southampton.

The extent of the growth in the demand for university education was best illustrated by recalling that, whereas in 1900 students in British universities numbered no more than 20,000, there were as many as 50,000 enrolled in 1936. Numbers continued at this level until the outbreak of World War II; but, as a result of the restrictions placed on arts students during the war years by the ministry of labour, the total fell to 38,000 in 1944.

Women accounted for more than 14,000 in the total figure and outnumbered men by more than 2 to 1 in arts faculties.

As in 1919, there was an unprecedented demand for places in the universities at the end of World War II. Former servicemen and women expressed the desire to continue courses interrupted by the war, and hundreds of others attracted by government grants who might not otherwise have sought a university education, applied for places. So great was the demand that the minister of labour found it necessary, in the early part of 1946, to ask university authorities to increase accommodation to the maximum and to reserve 90% of the places available for men in the academic year 1946–47 for former members of the forces. The result was, to take only one example which might be regarded as typical, that the number of men enrolled at Oxford in Oct. 1946 was 1,500 more than in 1938.

Even before this immediate demand arose, it had become manifest that it would not only be necessary to accommodate greatly increased numbers in the immediate postwar years, but also to embark on a policy of long-term planning. This latter need was made particularly obvious throughout the war years as a result of the unsatisfied demand for trained scientists; and in Dec. 1945 a committee was appointed by the lord president of the council "to consider the policies which should govern the use and development of our scientific man-power." In recommending that the number of university students in all faculties (and not merely in the sciences) should be doubled between 1946 and 1956, Sir Alan Barlow, who

presided over the committee, and his colleagues followed reports prepared during the war years by the parliamentary and scientific committee, the British Association committee on postwar university education and the Association of Scientific Workers.

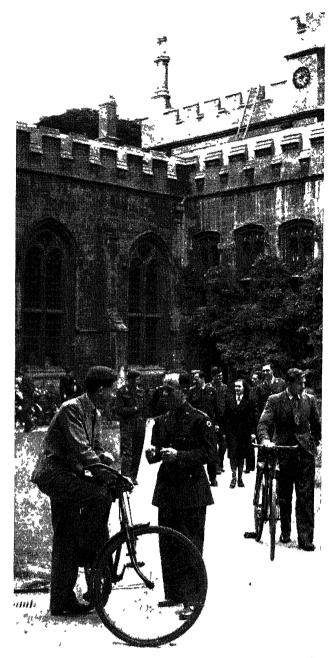
One factor which contributed to the demand for university education in prewar years was the development of scholarship schemes, more especially the institution of state scholarships and the extension of the schemes administered by local education authorities. In May 1946, the minister of education announced that increased financial help would be given to university students. Those who won open scholarships and exhibitions awarded by universities, colleges of universities and university colleges would become eligible to receive from the ministry such supplementary financial assistance as might enable them to pursue their studies freed from financial anxiety. In addition, state scholarships, of which 360 were awarded annually, were similarly supplemented; and local education authorities, since they now no longer needed to employ their resources in supplementing other awards, were in a position to help such students, other than those who had won open or state scholarships, as had "shown themselves to be of good intellectual quality and likely to complete a course at a university or elsewhere with credit."

Every increase in numbers had, of course, intensified the financial problems of the universities. This had been tacitly realized in 1919, when the university grants committee was appointed "to inquire into the financial needs of university education" and to advise the government "as to the application of any grants that may be made by parliament to meet them." When in 1937–38 the total revenue of the universities was £6,500,000, the treasury's contribution was £2,500,000.

Two important statements on the finances of the universities were made in 1946 by the chancellor of the exchequer. First, he stated his intention of making available to the universities in 1946-47 the sum of £9,450,000, including grants of £2,250,000 for capital expenditure. Secondly, he gave new and extended terms of reference to the university grants committee. These now included (a) inquiry into the financial needs of university education; (b) advice to the government on the application of grants; (c) collection and examination of information on university education at home and abroad; and (d) assistance, in consultation with the universities and other bodies concerned, in "the preparation and execution of such plans for the development of the universities as may from time to time be required in order to ensure that they are fully adequate to national needs."

It would, however, be idle to pretend that these problems and more particularly that of accommodation, were confined to British universities. They were equally the problems facing university authorities in the dominions. That the dominions were tackling these, as well as local, problems successfully, there was abundant evidence. There was everywhere a consciousness of the need for increased facilities; and of this there was no more striking evidence than the rapidity with which plans had matured for the building of the new university at Canberra, Australia.

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Undergraduates at Balliol college, Oxford, chatting with U.S. soldiers taking courses while awaiting transport home in 1945. At Oxford, as at all other British universities, postwar overcrowding was common as veterans swelled the normal enrolment after the close of World War II

no. 4 (1944); Association of University Teachers, Report on University Developments (1944-45). (J. M-ML.)

The Germans wrecked the educational system in every country they occupied during World War II, whether by wholesale massacre and deportation of teachers, as in Poland, Greece and Yugoslavia, or by a combination of economic, physical and psychological pressure, as in France, Belgium, the Netherlands and Denmark. In every occupied country teachers played a prominent part in resistance, a most glorious example being that of Norway, where teachers and pupils combined to defy the invaders openly and despite brutal deportation of teachers, never gave way. Once liberated, every country turned to reform, Czechoslovakia being early in the field. There was a

marked disposition, extending to the formerly neutral countries of Sweden and Switzerland, to learn from the English reforms, which were being closely studied, often at first hand

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Education, U.S. Office of

See Education; Federal Security Agency.

Educational Policies Commission

See EDUCATION.

Education Association, National

See Societies and Associations.

Edward VIII

See Windsor, Edward, H.R.H. The Duke of.

Eggplant

See VEGETABLES.

Eggs

World egg production declined in Europe and China during the decade 1937-46, but the increases in the United States and Canada helped greatly to offset the loss, so that in 1946 the U.S. department of agriculture estimated that world egg production was only 5% below the prewar average. North America and Europe continued to produce about three-fourths of the total world output. China was becoming an important egg exporter before 1940, particularly in dried eggs, but that source disappeared in 1941. The United Kingdom imported large amounts of dried eggs and by 1945 was able to supply about 200 eggs per capita compared with 196 in the prewar period 1935-39. Egg production in Europe was off about 50%. The large stocks of dried eggs accumulated in 1943 and 1944 were used for relief purposes, leaving stocks at a low level at the end of the decade.

Production of eggs in the U.S. responded to the sudden increased demand of the decade 1937–46 and provided a large part of the food needed during World War II. Previous to 1937, egg production in the U.S. had been fairly stable, ranging from 30,000,000,000 to 40,000,000,000 with a prewar (1934–39) average of 38,000,000,000. The high rate of increase began in 1940, and by 1945 the output was 40% larger. Production increased 50% during the decade 1937–46, about 10% being due to the increased output per hen. The output per laying hen increased from an average of 130 eggs in 1937 to 152 in 1945 as

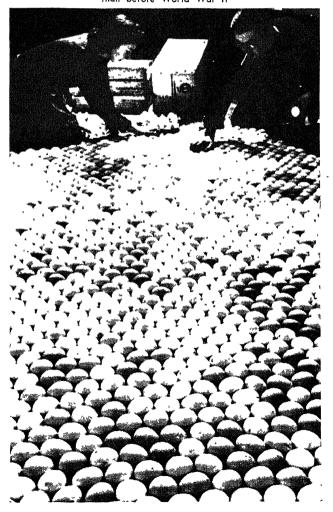
Production of Eggs in the U.S., 1937-46

(In dozens)																
1937							. 3,443,0	000,000								. 4,430,000,000
							. 3,424,0									. 4,972,000,000
							. 3,561,0		1944	٠	٠	٠	•		٠	. 5,305,000,000
							. 3,629,0									. 5,160,000,000
							. 3,828,0	00,000	1946	•	٠	٠	٠	٠	٠	.4,900,000,000*
*Preliminary estimate.																

the result of better breeding, feeding and disease control. The poultry industry had made great strides after 1920 and had seen wide adoption of the results of research in the form of better practices. A large supply of concentrated feeds was also an important factor. The production of eggs increased more rapidly than did the output of poultry meat.

The promptness with which the U.S. poultry industry could respond to the increasing demand was due in considerable measure to the changes in hatching practices. The commercial hatchery had replaced the "setting hen" as well as the small incubator in many poultry raising communities. Whereas, in 1937, the hatcheries produced about 687,000,000 chicks, in 1943 the output was 1,283,-044,000 or more than 75% of the chicks raised on farms. The development of the practice of "sexing" chicks at the hatchery and selling pullets or cockerels as the buyer desired was also an innovation. The egg producer could get pullets to increase his flocks without the cost of raising a flock of both sexes, with the males to be sold as broilers. This development favoured higher specialization on egg farms. The baby chicks were also treated to prevent diseases. Through the selection of setting eggs from highproduction flocks, the average production was increased,

Eggs marked for export from Denmark in the summer of 1945. After the close of European hostilities the country was able to resume export of butter, bacon and eggs, but in smaller quantities than before World War II



as was shown by the high output of more than 150 eggs per hen attained in 1946. The egg supply for U.S. civilian consumers increased from 306 eggs in 1937 to 390 in 1945.

The price of U.S. eggs advanced quickly in late 1939 after the outbreak of war in Europe, but heavy production checked the rise and prices broke, causing many egg handlers to lose heavily on stored eggs. The average farm price of eggs was 21.3 cents per dozen in 1937 and dropped to 17.4 cents in 1939. Prices then began to advance and continued up to 37.1 cents in 1943, dropped to 32.4 in 1944 and made a new high of 37.8 cents in 1945. During the first half of 1946 it ran below the level of the same period in 1945. While egg production in 1946 was smaller than in 1945, the stocks of shell and frozen eggs were larger.

Price-support programs for eggs, first tried in 1933, were put into operation from the spring of 1941 primarily to get eggs for lend-lease shipment. This practice was continued through 1946 with numerous changes. Up to Jan. 1946, the equivalent of about 88,000,000 cases of eggs, or 12% of total farm production, was purchased by the U.S. department of agriculture. Dried eggs accounted for nearly 90% of the total, most of which was shipped under lend-lease. Purchases of shell eggs reached a total of 2,917,000 cases in 1940, dropped to 1,755,000 cases in 1941, then rose to a record high of 5,609,000 cases in 1944. In Aug. 1941 eggs were put under the Steagall act, which provided that prices be supported at 85% of parity. This continued until Nov. 1942, when the minimum was set at 90% of parity, and farmers were in all cases to receive an annual average of 34 cents per doz. The actual average was 37.1 cents per doz. The support program was continued through 1944 at 27 cents per doz. average for producers' straight-run eggs, and for 1946, 29 cents.

The National Poultry Improvement plan under the U.S. department of agriculture was in operation in 41 states in 1936-37, covering 30,558 flocks supplying 1,239 hatcheries. By 1944-45 the number had increased to 73,578 flocks supplying 3,181 hatcheries. By thus improving the quality of the laying hens raised at the source, the great gain in output was attained.

The expansion of the U.S. egg drying industry was an outstanding factor in utilizing the large egg crop. From the small total of 2,291,000 lb. of dried eggs produced in 1937, the output rose to 320,742,000 lb. in 1944. The dried egg was a space-saver for overseas shipment under lendlease and was well adapted to military uses in distant areas. (See also POULTRY.) (J. C. Ms.)

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Egypt

An independent kingdom in northeast Africa, Egypt is bounded N. by the Mediterranean sea, S. by the Anglo-Egyptian Sudan, N.E. by Palestine, E. by the Red sea and W. by Libya and the Sahara. Area: c. 383,000 sq.mi. (cultivated land, 13,600 sq.mi.); pop. (census 1937) 15,904,525; (est. June 1944) 17,620,000. Chief towns (pop. est. 1944): Cairo (cap., 1,455,400); Alexandria (756,000); Port Said (132,000); Tanta (105,000); Mansura (79,000); Damanhur (71,000); Asyut (65,000). Language: Arabic; religion: Mohammedan 91%, Coptic 7%. Ruler: King Farouk I. Prime ministers: Mustapha Nahas Pasha (May 1936–Dec. 30, 1937); Muhammad Mahmoud Pasha (Dec. 30, 1937–Aug. 1939); Ali Maher Pasha (Aug. 18, 1939–June 21, 1940);

Hassan Sabry Pasha (June 28, 1940-Nov. 14, 1940); Hussein Sirry Pasha (Nov. 16, 1940-Feb. 2, 1942); Mustapha Nahas Pasha (Feb. 5, 1942-Oct. 8, 1944); Ahmed Maher Pasha (Oct. 8, 1944-Feb. 24, 1945); Mahmoud Fahmy el-Nokrashy Pasha (Feb. 24, 1945-Feb. 15, 1946); Ismail Sidky Pasha (Feb. 17, 1946-Dec. 8, 1946); Mahmoud Fahmy el-Nokrashy Pasha (after Dec. 9, 1946).

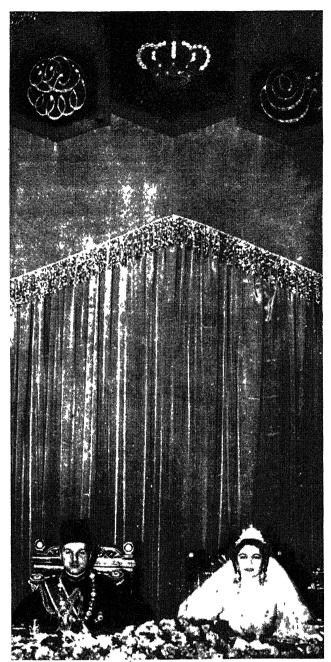
Decade of Transition.-Three features characterized the history of Egypt during the decade which followed the signing of the Anglo-Egyptian treaty of Alliance in Aug. 1936. The country moved further in the direction of the recognition of its status as a fully independent kingdom, which was the avowed object of all its political parties. It suffered political convulsions at short intervals, owing to the continued conflict of aims and personalities between the two most powerful elements in Egyptian society, the Wafd (the strongest and best organized political party) and the palace and its supporters. Thirdly, there was a notable increase in commercial activity, coupled with a rapid growth in industrialization, which brought about an increase in population, especially in the cities (for which precise figures were not available) and the development of organized labour on the western model. Only the third of these features was at all a new development in the life of modern Egypt. The other two were characteristic of the whole period from 1919, after which the struggle for power between the two main opposing elements of Egyptian political life took place against a general background of the national desire for greater independence. Egypt had need of foreign support as much as Britain had need of insuring the free passage of her ships through the Suez canal. Egyptian governments showed their recognition of this by their readiness to co-operate with Britain, so far as they were able, and their opponents customarily took advantage of the government's necessity in this regard by attacking the ministers of the moment on grounds of subservience to Britain. Between 1937 and 1946 there were examples of both Wafd and palace governments co-operating closely with Britain, and of the palace parties and the Wafd, in opposition, vigorously attacking their opponents for such co-operation.

The treaty of 1936 was signed while Mustapha Nahas Pasha, the leader of the Wafd, was in power, but at a period of party truce and collaboration. It bore the signatures of most prominent Egyptian statesmen of the time, and was accorded almost nation-wide approval. Its terms brought to an end nearly all the outward signs of Egyptian dependence. Britain withdrew its high commissioner and the two countries exchanged ambassadors. At Britain's request, a special session of the League of Nations unanimously elected Egypt in May 1937 to membership in the league. British forces were to be withdrawn to the neighbourhood of the Suez canal and were ultimately to hand over to the Egyptian army the defense of the country. Under the terms of the treaty, certain strategic roads and bridges were built, which proved of the utmost value during the campaigns of World War II. One of the chief survivals of the days of Egyptian dependence did not concern Britain alone among foreign powers: this was the regime of capitulations, whereby the nationals of most European, and many American, states were not subject to the same laws or accountable in the same courts as Egyptians. On May 8, 1937, a conference at Montreux, attended by representatives of Egypt and of all the capitulatory powers, agreed to a new convention, which was ratified by the Egyptian chamber on July 19, 1937, and came into force on Oct. 15, 1937. By this agreement the system of capitulations, a survival of Ottoman days, was to be abolished.

Egypt obtained full rights of justice and taxation over all residents, and the mixed courts were to apply only Egyptian law to non-Egyptians during a period of 12 years, after which they were to be abolished.

Wafdist Opposition.-After the formation of the Egyptian kingdom in 1922, the rivalry of the palace and the Wafd had been greatly exacerbated by a strong personal hostility between the first king of modern Egypt, Fuad I, and the first leader of the Wafd, Saad Zaghlul Pasha. A similar rivalry soon showed itself between their respective successors. King Farouk came of age on July 29, 1937. In October he demonstrated his independence of attitude by appointing as chief of the royal cabinet (political adviser) Ali Maher Pasha, in spite of the Wafd's strong objection to him. The popularity of the Wafd was declining; student riots, fomented as usual in Egyptian politics by the opposition, and an attempt on Nahas Pasha's life, made this evident. On Dec. 30, 1937, the king was able to dismiss Nahas Pasha and to appoint Muhammad Mahmoud Pasha as premier of a cabinet in which there were no Waldist ministers. The Wafd, however, remained exceedingly powerful in the country. The party was well organized and had great powers of emotional appeal of which it made skilful use. On the other hand, its power of retaining the support of the mass of the people was much invalidated by its inability to hold the loyalties of its more prominent members. In Aug. 1937, Mahmoud Fahmy el-Nokrashy Pasha, who had been generally regarded as the mainstay of Nahas, quarrelled with his leader and went formally into opposition, and, in 1939, other prominent Wafdists broke away from Nahas and formed, in memory of his predecessor, a party called the Saadists, which co-operated with the government. Even with this addition of strength to the cabinet, the task of administering the country in the face of Wafdist opposition was a most difficult one and, in Aug. 1939, Muhammad Mahmoud Pasha resigned. The opposition was fierce, and took, as always, a markedly anti-British form. But there was a general fear of Italian ambitions in Egypt, so that popular support for anti-British appeals was limited. At the same time the Wafd had weakened itself by the internal dissensions among its leaders, which had brought about the formation of dissident groups, notably the Saadists. On Aug. 18, 1939, Ali Maher Pasha was able to form a strong cabinet with Saadist support, and in September, there was no serious opposition to the government's action in implementing the Anglo-Egyptian treaty by breaking off relations with Germany and by declaring a state of siege which amounted, in effect, to the imposition of martial law.

Egypt and the War.—The intervention of Italy (June 10, 1940) brought the war to Egyptian soil. British forces in Egypt were at once engaged with the Italian army in Libya, and those in the Sudan with the garrisons of Ethiopia. Italian aircraft bombed objectives in Egypt, and Egyptian territory was invaded. An immediate consequence of this development was the fall of Ali Maher Pasha. Wafdist refusal to co-operate made a government of national union impossible. The government of Hussein Sirry Pasha maintained the policy of non-belligerency. Egypt was, except for a few elements, some of them highly placed, strongly pro-Allied in sentiment and, on Sept. 22, 1940, four Saadist ministers resigned as a protest against the government's failure to declare war. But there was good reason to suppose that the British government was not anxious for this step, since Egyptian non-belligerency enabled them to profit by axis acceptance of the status of Cairo as an "open city," and since there was no immediate prospect of their being able to provide the



King Farouk of Egypt and his young queen, Farida, at their wedding banquet, Jan. 20, 1938

Egyptian armed forces with adequate equipment. In 1940 the absence of a market for Egyptian cotton brought on an economic crisis which was met by the British action in purchasing the entire crop for about £25,000,000.

Early in 1942, the latent political crisis came to a head. Relations between King Farouk and the government were impaired by a dispute over a minor constitutional issue which might have been settled quietly but for the widespread unpopularity of the cabinet. The Wafd had steadily gained in popular favour until it commanded the support of the overwhelming majority of the people. The consequent insecurity of the government's position alarmed the British authorities who were responsible for the defense of the country. The British ambassador, Sir Miles Lampson, began to press for the setting up of a more representative government. Nahas Pasha refused the support of the Wafd to any coalition cabinet and the king was

unwilling to call upon him to form his own. Finally, under very considerable pressure, King Farouk agreed to summon Nahas Pasha, who, after a three-day crisis, became prime minister at the head of an all-Wafdist cabinet on Feb. 5. In view of the Wafd's long history of conflict with British influence in Egypt, the significance in this change of government was at first not fully understood outside the country. Allied peoples were uneasy and the German radio continued for more than a month to treat the change as a serious British setback. But Nahas Pasha had been responsible for the signing of the Anglo-Egyptian treaty, and the Wafd had always claimed that it stood for a policy of independence and alliance so far as Britain was concerned. Very soon the reality of Egyptian support for the Allies was put to a severe test.

In the summer of 1942 German designs on Egypt came very near to success. A British setback in Libya, with heavy loss of tanks, opened the way to the German Afrika Korps, which advanced to the gates of Alexandria. For some weeks, while reinforcements were diverted from the far east or dispatched from Britain, the fate of Egypt was in the balance. At this time the defenders of the country were wholly dependent on Egyptian support. So dependent were the Allies upon Egyptian labour and services and

Egyptian students at Cairo protesting the continued presence of British troops in 1946. The banner reads "Long live Nile valley unity"



upon the tranquillity of their base that any serious Egyptian hostility, a campaign of riots and terrorism such as that of 1919, or a well-planned general strike, such as was organized after the war had ended, would have crippled the defending armies. But throughout the crisis Nahas Pasha and his government maintained a steady and determined policy of co-operation with Britain, and Egyptian public opinion remained apparently quite unmoved by axis propaganda and promises, and kept extraordinarily calm under the threat of imminent invasion. In Oct. 1942 this attitude was amply justified by the victory at El Alamein and the expulsion of the axis forces from northeast Africa.

Political opposition to the Wafd was at first very slight. After Nahas became prime minister, parliament was dissolved. New elections in March 1942, boycotted by the opposition parties, returned 231 Wafdists in a house of 264. But the Wafd's characteristic failure to hold its leaders together soon showed itself. In May 1942 Makram Ebeid Pasha, minister of finance and the second man in the party, resigned and formed a new party. Next year he published a "black book," bringing serious charges of corruption against the government. Parliament supported Nahas Pasha but the accusations were not forgotten.

Pan-Arab Movement.-After the danger of German invasion had passed, interest in external politics was concentrated on the affairs of the Arabic-speaking world. The idea of union of the Arab peoples of Asia, Egypt's eastern neighbours, was not new, but in the early days of that movement Egypt had played no part. Sympathy with the Arab case in Palestine had led in Oct. 1938 to the calling of a pan-Arab congress in Cairo. Thereafter Egypt played a prominent part in Arab affairs. The prospects of an Arab union were already being studied officially, when the crisis in Lebanon in Nov. 1943 provoked a strong outburst of pro-Arab sentiment from all parties. The king joined with the government in expressions of sympathy with the Lebanese. During 1944 Zionist claims upon Palestine encouraged the Arab movement, and a conference of Arab states, presided over by the Egyptian prime minister, met at Alexandria in September. On Oct. 7 the conference dissolved, having laid the foundations of the Arab league (q.v.), of which Egypt was the strongest and most important member-state. On the next day Egyptian internal politics reasserted themselves with the abrupt dismissal of Nahas Pasha by the king.

The differences of opinion between the king and Nahas Pasha would probably have led to an earlier dismissal but for the Arab conference. The new government, led by Ahmed Maher Pasha, a Saadist and once a close associate of Nahas Pasha, included Makram Pasha and leaders of most parties except the Wafd. The elections, held in Jan. 1945, were boycotted by the Wafd, and resulted in a big government majority. They were notable for the first appearance in Egyptian elections of Socialist candidates. Following the decisions of the conference of Allied leaders at Yalta, the Egyptian government declared war on the axis and, on the day this was announced, the prime minister was assassinated in the parliament buildings by a young Egyptian who had been released from internment a short time before for fascist sympathies. Nokrashy Pasha, the foreign minister, succeeded him, and the cabinet remained otherwise unchanged.

Postwar Rise in Anti-British Sentiment.—The Wald, in opposition, reverted to the traditional policy of demanding concessions from Britain and of accusing the government of neglecting Egyptian interests. Its chief claims were for the total evacuation of British troops and, later, for

"unity" with the Sudan. Anglo-Egyptian relations were good on the government level, but popular support for these claims was encouraged by circumstances. Owing to Egypt's importance as a base for the far eastern war, Germany's defeat had appeared to lead to an increase, rather than to a lessening, in the number of foreign troops in the country, while British plans to develop Sudanese self-government led to fears of a break between that country and Egypt, which shared it with Britain in nominal condominium.

The defeat of Japan was followed by the removal of the wartime press censorship. Political vehemence increased, each party accusing the other of lack of patriotism, and popular feeling against Britain rose swiftly. In Dec. 1945 the government was obliged to ask Britain for a revision of the treaty. The Wafd continued its agitation and was joined in this, although in nothing else, by the new and powerful Brotherhood of Moslems. Student riots broke out and on Feb. 15, 1946, Nokrashy Pasha resigned. Two days later Ismail Sidky Pasha became prime minister. He pressed Egyptian claims upon Britain, and, at the same time, kept a firm hand upon the internal order of the country. Student demonstrations and well-planned general strikes were organized, designed to show the strength of popular feeling for the evacuation of British troops. Although generally orderly, these sometimes gave rise to undisciplined mobs which, on two occasions, led to clashes with British troops and to bloodshed.

Meanwhile, negotiations with Britain proceeded. The British prime minister, Clement Attlee, announced in the house of commons on May 7, 1946, his government's intention to withdraw all British forces from Egypt, according to a time-table to be jointly agreed upon, and to negotiate for a treaty of mutual assistance. The way for an agreement between the two governments was made clear and it was likely that, a year earlier, a treaty on this basis might have been easily concluded and have been generally popular in Egypt. But the delay had exacerbated feelings, so that political parties hostile to the Egyptian government were able to find support for increasingly extreme demands. The British delegates who discussed terms with an Egyptian delegation (boycotted by the Wafd) made slow progress, although the evacuation of British forces was begun. On Oct. 7 Sidky Pasha visited London; he discussed Anglo-Egyptian relations with the British foreign secretary, and on his departure on Oct. 26 made an optimistic statement. In Egypt, however, his claim that "Britain has accepted the unity of Egypt with the Sudan under the Egyptian crown," was held to conflict with the British prime minister's statement, made in the house of commons on Oct. 28, that "no change in the existing status and administration of the Sudan is contemplated." The future status of the Sudan became the chief object of opposition propaganda. On Dec. 8 Sidky Pasha, who had been ill for some time, resigned. He was succeeded by Nokrashy Pasha.

In ten years Egypt had emerged as the richest and strongest of middle eastern countries. Industrialization had begun to be important. At Mehalla al Kubra, nearly 30,000 workers were employed in the manufacture of textiles. Cairo, for which accurate population figures in 1946 were not available, had become by far the greatest city in the middle east and was estimated to contain nearly 2,000,000 inhabitants. Egyptian air lines linked the population centres of the eastern Mediterranean, and the war had led to the employment of Egyptians in many thousands by the Allied forces. In consequence, Egypt had available a skilled and semiskilled labour force, unrivalled in the

area, and was evidently ripe for further steps in industrialization. Organized labour showed its strength in the general strikes of 1946, and, although these were part of a national demonstration, it seemed clear that the existence of grave social problems would profoundly affect the life of the country, as soon as the tension with regard to Britain was relaxed. (See also Anglo-Egyptian Sudan.)

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Egypt: Statistical Data										
	Value	1938 Amount	Value	1943 Amount						
	(000's	or	(000's	or						
ltem	omitted)	Number	omitted)	Number						
Exchange rate	•	Egyptian Pound =£1 0s. 61/4d. (\$5.013)		1 Egyptian Pound =£1 0s. 61/4d. (\$4.138)						
Finance Government revenues .	£38,090		£48 843							
Government revenues .	(\$186,223)		£68,863 (\$277,863)							
Government expendi-	£37,254 (\$182,134)		£58,004 (\$234,046)							
tures	£4,299		£98,409							
Transportation	(\$21,019)		(\$397, 081)							
Railroads		4,414 mi.		4,679 mi.*						
Highways		4,670 mi.		7,900 mi.*						
Communication Telephones		59,922		70,536†						
Telegraph lines		4,809 mi.		6,700 mi.†						
Radio sets		72,359		• • •						
Manganese ore		168,775 tons								
Tungsten		1,513 tons 248,829 tons								
Crops										
Sugar cane Corn		2,536,627 tons 1,764,977 tons		2,319,239 tons* 1,550,936 tons*						
Wheat		1,404,833 tons		1,423,069 tons*						
Livestock Sheep		1,918,945‡		1,423,772						
Goats		1,310,986‡		759,794						
Mules and horses		1,164,845‡		839,021						
Sea products Sponges		379,000								
Exports—total	£30,087	•••								
Textiles	(\$147,094) £22,090									
	(\$107,999)									
Vegetable products	£3,824 (\$18,695)	•••								
Imports—total	£37,871	•••								
Textiles	(\$185,152) £7,216	•••								
	£7,216 (\$35,281)									
Chemical and pharma- ceutical products	£4,952 (\$24,212)	• • •								
Mineral products	£4,699									
Defense	(\$22,974)									
Standing army personnel		21,743								
Reserves		6,480 1,108								
Reserves		•••								
Military expenditures .	£2,933 (\$14,337)									
Education	(+,,									
Elementary and secondary schools		4,065§								
Students		1,064,209\$								
Colleges and universities		9§								
Students		17,416§								
Foreign schools Students		410‡ 76,750‡								
*1944. †1941.	11937.	§1939.								
11.1.1.		0								

Eichelberger, Robert Lawrence

Eichelberger (1886—), U.S. army officer, was born March 9, 1886, in Urbana, O. A graduate of West Point, he was commissioned a 2nd lieutenant in 1909, saw service on the Mexican border and in the Panama Canal Zone, and in 1918 was awarded the D.S.C. and D.S M. while serving with the army of occupation in eastern Siberia. In addition, three decorations were bestowed upon him by the Japanese government. After World War I he was stationed in the orient. On returning to the U.S., Eichelberger was attached to the general staff

for several years in the 1920s. He returned to West Point and occupied the post of adjutant general from 1931 to 1935, when he was transferred to Washington to serve as secretary to the general staff in the years preceding the outbreak of World War II. In 1940 he was reassigned to West Point, where he streamlined the entire curriculum of training. During his 14 months as superintendent of the academy, he introduced an air training course which enabled cadets to qualify for commissions in the air force.

Made a brigadier general in 1940, Eichelberger was promoted to the rank of major general in July 1941 and to that of lieutenant general in Oct. 1942. In Jan. 1943 Gen. Douglas MacArthur placed him in command of U.S. troops in Papua. As field commander in the Netherlands New Guinea in 1944, he took part in the invasion of that territory in April. He led the 8th army at Luzon in Jan. 1945, and the Mindanao invasion on March 12. After the defeat of Japan in August, he was in command of the 8th army occupation troops and, on Dec. 19, 1945, was placed in charge of all U.S. occupation troops in Japan.

Eire

A republic¹ associated with the British commonwealth of nations, Eire occupies five-sixths of an island to the west of Great Britain. Area: 26,601 sq.mi.; pop. (1936 census) 2,968,420; (1943 est.) 2,949,713. Chief towns (1943 est.): Dublin (cap., 495,074), Cork (75,484), Dun Laoghaire (42,105), Limerick (42,070). Languages: English 76.3%, Irish (Gaelic) 23.7%; religion: Roman Catholic 93.4%, others -6.6%. Presidents: Dr. Douglas Hyde (de h-Ide) (June 25, 1938–June 24, 1945); Seán T. O'Kelly (after June 25, 1945). Prime minister (Taoiseach): Éamon de Valéra (from March 1932).

British Agreement.—From 1937 to 1946 Eire (Ireland) saw considerable change in practically every field: international, political, legislative, economic and social. There was no change of ministry. For the whole period the Fianna Fáil party under Eamon de Valéra was in office. The most marked change occurred in the international sphere. The ten-year period opened with Eire in deep conflict with Britain and ended with all questions between the two countries settled with one exception—that of partition.

The settlement took place in April 1938 after negotiations which had begun in the previous January and looked more than once almost certain to break down. There had been several major matters in dispute. In 1932 the Irish parliament (Dáil Eireann) abolished the oath of allegiance to the crown which all deputies had taken till then; also the Irish government retained the land annuities and other sums totalling £5,000,000 a year. These the Fianna Fáil party, until then in opposition, asserted were neither morally nor legally due to Britain, and payments were suspended immediately after the party was elected to office. The British government for its part asserted: (1) that the oath of allegiance was an integral part of the treaty of 1921 and that the previous Irish government had recognized this; (2) that the Irish government had also accepted Britain's right to the disputed moneys by agreements solemnly

Leamon de Valéra, speaking in Dáil Eireann on July 17, 1945, said in reply to a query as to whether the state was a republic: "The position, as I conceive it to be, is this we are an independent republic, associated as a matter of our external policy with the states of the Brutish commonwealth. To mark this association, we avail ourselves of the procedure of the External Relations act just quoted, by which the king recognized by the states of the Brutish commonwealth therein named acts for us, under advice, in certain specified matters in the field of our external relations."

entered into, and had in fact paid them for ten years. The Irish reply was that the oath was not mandatory in the treaty, that in any case it was entirely a matter of domestic policy within the competence of the people to decide and that they had just decided in the general election of February of that year (1932) that the oath should go. As to the agreements regarding the disputed sums, the Irish government stated that these had never been submitted to parliament for ratifications by the people's representatives and could not for that reason be regarded as binding. The dispute lasted for six years.

The Irish government placed the moneys in a suspense account and offered to abide by international arbitration. Britain proposed commonwealth arbitration which was not accepted. Complete deadlock ensued and the British government placed such import duties on goods from Eire as would recoup it for the loss annually of £5,000,000. The Irish government replied in kind, taxing imports from Britain. The effect on trade was severe and, coming on top of the world slump then nearing its nadir, threatened the whole Irish economy. Irish exports to Britain fell from £35,000,000 in 1931 to £19,000,000 in 1935 and British exports to Ireland from £49,000,000 to £37,000,000 in the same period.

Two significant changes occurred in 1937. In Britain Neville Chamberlain succeeded Stanley Baldwin in May, and in Eire the electorate by plebiscite passed into law an entirely new constitution. The constitution, which replaced that of 1922, made many major changes. It declared all Ireland to be the national territory; it declared that portion of Eire which was formerly the Irish Free State to be a "sovereign, independent, democratic state"; it vested, either in the elected president, for which office it provided, or in the government, all the powers formerly held by the crown; it left for determination by ordinary legislation Eire's relationship with Britain and other countries; it reconstituted, but only more or less as an advisory body, the senate which had been abolished after defeating several important bills from Dáil Eireann, the popularly elected house.

Britain and the Constitution.—This constitution, which had first been approved by the Dáil before being legalized by the people's vote (July 1, 1937: 685,105 for, 526,945 against), came into force six months after the plebiscite, i.e., on Dec. 29, 1937. On the same day a statement was issued from 10 Downing street, London, which referred particularly to the opening articles of the constitution:

His majesty's government in the United Kingdom have considered the position created by the new constitution which was approved by the parliament of the Irish Free State in June 1937 and came into force on Dec. 29. They are prepared to treat the new constitution as not affecting a fundamental alteration in the position of the Irish Free State—in future to be described under the new constitution as "Eire" or "Ireland"—as a member of the British commonwealth of nations. . . . They cannot recognize that the adoption of the name "Eire" or Ireland or any other provisions of those articles (2, 3 and 4) involves any right to territory or jurisdiction over territory forming part of the United Kingdom of Great Britain and Northern Ireland. . . .

The constitution was, however, regarded by the Irish government as finally determining Eire's status and as thus removing from the field of Anglo-Irish discussions Eire's relationship with other states or its internal sovereignty. As soon as it came into force, therefore, De Valéra proposed to the British government a conference on remaining differences. Chamberlain accepted the proposal, and after three months of negotiation a comprehensive agreement was signed on April 25, 1938. It ended what had come to be called the "economic war" on terms favourable

to Eire-for the payment by the Irish government of one lump sum of £10,000,000 the disputed £5,000,000 a year was compounded, and the penal tariffs on both sides were withdrawn. The settlement also restored unconditionally to Irish sovereignty what were known as the treaty ports— Cobh, Berehaven and Lough Swilly-which since the general evacuation in 1922 were still in British possession. At the same time a clause in the 1921 treaty (article 7b) which gave Britain what defense facilities it might require "in time of war or of strained relations with a foreign power" was repealed. Thus all Ireland with the exception of the six northeastern counties (known as Northein Ireland) came exclusively under Irish sovereignty. A trade agreement was also concluded which gave to Britain a specially advantageous position in the Irish market. This comprehensive settlement was ratified after full debate by the parliaments of both countries.

War and a Pledge.—The treaty ports were taken over by the Irish government in a simple ceremony on July 11, 1938, and this enabled the defense of the state to be planned as a unit in view of the increasingly troubled international situation. The Irish government had already indicated on several occasions that in another great war Eire would remain neutral but would regard itself as having the special duty of ensuring that no attack on Britain would be made from Irish soil. On May 29, 1985, De Valéra in a speech in the Dáil had pledged himself that "our territory will never be permitted to be used as a base for attack upon Britain." As war approached, this pledge was renewed, coupled with a repetition of the government's determination to remain out of the conflict. Meanwhile at Geneva, Ireland used whatever influence it possessed to uphold the League and secure the pacific settlement of international disputes.

Neutrality.—The war that broke out on Sept. 1, 1939, was one therefore which the Irish nation felt it had no part in bringing about and when a special meeting of Dáil Eireann was summoned on Sept. 2 De Valéra could say:

"Back in February last I stated in a very definite way that it was the aim of government policy, in case of a European war, to keep this country, if at all possible, out of it. We have pursued that policy and we intend to pursue it. . . ." His declaration of neutrality was supported by the leaders of all opposition parties.

This unanimity continued through the six years of war, and manifested itself especially at times of tension and crisis. A defense conference was set up on which all opposition parties were represented. It remained in being from May 30, 1940, to May 16, 1945. In June 1940, when after the fall of France it looked as if Ireland would be invaded, the leaders of the three main parties addressed a great joint meeting in Dublin and called for volunteers for the defense forces. A total of 202,000 answered the call in ten weeks. On Nov. 5, 1940, when it seemed as if pressure would be put on the country to hand over the treaty ports; on May 21, 1941, when the British government proposed to extend conscription to Northern Ireland; and on Jan. 26, 1942, in his statement on the landing of U.S. troops in the north without consultation with the Irish government, De Valéra was able to speak as a national leader, voicing the views of the people irrespective of politics. This was particularly evident in March 1944, when the text of his reply to the U.S. note demanding the expulsion of German and Japanese diplomatic representatives was published. In this reply he refused to take such action which, he said, was universally regarded as the first step to war. Public opinion immediately manifested its support of the Irish government's stand. The four daily papers (three of them opposition papers) all approved the refusal and for the first time in the history of the parliament De Valéra re-

Banners carried by striking farmers of Eire through the streets of Dublin in 1939 asked for a fairer return on farm produce and urged agricultural workers to stay on the land. Both needs were mutually dependent factors in the drive for increased tillage and national self-sufficiency



ceived a non-party ovation when he entered the house. It was because this unanimity was so obvious to Irishmen during the whole period of the war that in his most notable broadcast during the ten years, his temperate reply to Winston Churchill on May 16, 1945, De Valéra said: "That Mr. Churchill should be irritated when our neu-

trality stood in the way of what he thought he vitally needed, I understand, but that he or any thinking person in Britain or elsewhere should fail to see the reason for our neutrality I find it hard to conceive." Fears were expressed in many Irish quarters during those years that misunderstanding of Eire's attitude would lead to its isola-

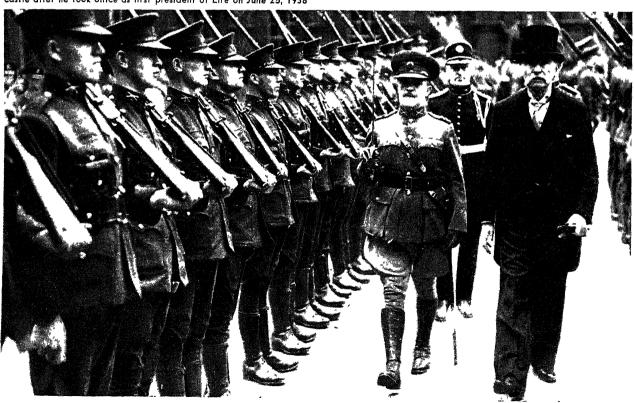
tion from other countries.

Effects of War.-World War II affected Irish life in numerous ways. Many industries dependent on raw materials from overseas had to go on short time or close down altogether. All forms of building and construction were particularly affected, as steel and timber both had to be imported. In consequence many Irishmen, including numbers of craftsmen, lost their employment or had their earnings reduced. This factor and other stronger, more idealistic motives occasioned the great flow of young Irishmen into Britain throughout the war. From Jan. 1, 1940, to Sept. 30, 1945, more than 194,000 exit permits were issued by the Irish government, and it was believed that in addition to the many thousands who left Ireland between the start of the war and Jan. 1, 1940, of whose numbers there was no record, many thousands of others travelled subsequently via Northern Ireland to Britain without permits. Large numbers of those who entered Britain worked in war factories; large numbers of others joined the British fighting services, winning many decorations for valour and receiving high praise from Churchill and other British leaders. Irish casualties both in the actual fighting and from bombing in Britain were considerable.

The internal economy of Eire was much changed by the war. When De Valéra took over the government in March 1932 a scheme to make the country self-sufficient was launched. This had gone a considerable distance by the end of 1936. It was pushed forward strongly in the next two years. Then difficulty in securing industrial plant halted the setting up of factories and the threat to imports of feeding-stuffs envisaged in the tense international situation made the tillage drive more urgent. Industry, which had expanded markedly up to 1938, began to contract, though in certain articles of manufacture, footwear, clothing, sugar, cement, practically all home needs were being supplied from home factories. Agriculture, on the other hand, got its greatest fillip from 1937 forward. A price policy had encouraged the farmers to increase the wheat acreage from 21,000 in 1932 to 220,000 in 1937. At the outbreak of the war it was 255,000 ac. and in the succeeding six years compulsory tillage and eventually compulsory wheat-growing brought it to 660,000 ac. in 1945, which was close to full requirements. At the same time other tillage crops useful for animal feeding were more widely grown. In all, the tillage area which had been 1,592,000 ac. in 1937 was 2,567,143 ac. in 1944 and declined slightly to 2,413,314 ac. in 1946. As distinct from volume of production which, taking all branches of agriculture, increased by a little more than 12% after 1937 the value more than doubled, increasing from £41,000,000 in 1938 to £97,000,000 in 1945.

Industrially the country fared less well. Increased prices raised the value of industrial output of transportable goods from £35,500,000 in 1938 to £41,600,000 in 1944 but there was a fall of almost 15% in volume. This was afterward rapidly made up and on Feb. 11, 1947, Sean Lemass, vice-premier, announced that the 1946 output was "substantially above" that of 1938. External trade was heavily hit. The values fell from a total trade of £66,900,000 in 1937

Dr. Douglas Hyde (right) reviewing the guard of honour at Dublin castle after he took office as first president of Eire on June 25, 1938



	1938	the Sidil	1941	1944			
ITEM	Value (000's omitted)	Amount or Number	Value (000's omitted)	Amount or Number	Value (000's omitted)	Amt. or No.	
Exchange rate		£1 = \$4.889		£1 = \$4.032		£1 = \$4.035	
Government revenues	£32.055 (\$156.715)				£2,646 (\$10,677)		
National debt	£49,430 (\$241,663)				£74,509 (\$300,644)		
Transportation Railroads		2.511 mi.				2.493 mi.*	
Highways		48,000 " 650 "				48,560 mi.* 650 mi.*	
Communication							
Telephones		43,086 21,548 mi.				52,631 20,803 mi.	
Minerals		164,000				169,372	
Coal		132,666 tons				205,300 tons*	
Limestone		399,290 " 501,349 "				526,456 " * 145,818 " *	
Crops		•				,	
Hay		5,063,203 " 2,762,583 "		5,222,153 tons† 2,733,565 " †		4,384,471 " 2,460,156 "	
Potatoes		2,712,616 "		3,492,474 " †		3,368,071 "	
Fodder beets		1,702,257 " 616,236 "		1,903,741 "		1,527,401 "	
Sugar beets		459,064 "		811,313 " † 727,320 " †		873,398 " 705,650 "	
Wheat		218,438 "		350,419 " †		12,232,952 "	
Livestock Poultry		19,630,230		17,392,788		18,329,500	
Cattle		4,056,209		3,624,900		4,245,900	
Sheep		3,196,601 958,805		2,195,200 853,300		2,663,100 380,800	
Sea products—total				2,213,210 tons			
Cod		807 tons 667 "		773 " 638 "		864 tons 674 "	
Herring		2,723 "		4,401 "		4,194 "	
Whiting	(71 012 /6251 002)	1,270 "		1,889 "	COE 742 * (C204 200)	3,118 "	
Manufactures—total	£71,813 (\$351,093) £32,460 (\$158,695) £6,963 (\$34,040)	•••			£95,743* (\$386,323) £40,321* (\$162,695) £11,397* (\$45,987)	• • •	
Tobacco	£6,963 (\$34,040)	•••			£11,397* (\$45,987)	• • •	
Beverage	£6,165 (\$30,143) £6,017 (\$29,415)	•••			£9,012* (\$36,363) £6,990* (\$28,205)	• • •	
Exports—total	£23.879 (\$116.742)	•••			£32,607 t (\$131,571)		
Cattle	£9,575 (\$46,811) £2,207 (\$10,788)	702,000 31,000 tons			£14,975‡ (\$60,426) £67‡ (\$271)	616,000‡ 486 tons‡	
Porter, beer, ale	£2,205 (\$10,782)	794,000 bbl.			£3,233 ‡ (\$13,045)	660,000 bbl.‡	
Butter	£2,160 (\$10,560) £41,417 (\$202,490)	21,000 tons			£41 ‡ (\$166) £34,630 ‡ (\$139,732)	250 tons‡	
Textiles (except apparel)	£4,113 (\$20,110)				£4,966 (\$20,038)		
Coal	£3,320 (\$16,230) £3,048 (\$14,903)	2,738,000 tons 425,000 "			£4,966‡ (\$20,038) £2,333‡ (\$9,415) £5,123‡ (\$20,673)	1,174,000 tons: 218,000 tons:	
Wheat	£2,265 (\$11,074)	127,000 "			£999‡ (\$4,029)	218,000 101151	
Defense				70224			
Standing army personnel		6,058 15,425		7,933† 15,000†			
Standing air force personnel		300		500†			
Reserves	£1,500 (\$7,334)	125	£3,300 (\$12,639)†	500†			
Education							
Elementary schools		5,166 469,925		5,076 462,245		5,032 454,647	
Students		336		352		371	
Students		36,092 2		38,713 2		39,787 2	
Universities		5,911		5,430		5,938	
*1943		•		* **		X	
†1940 ‡1942							
T							

 $(\pounds_{44,100,000}$ imports; $\pounds_{22,800,000}$ exports) to $\pounds_{57,700,000}$ in 1944 (£28,100,000 imports; £29,600,000 exports) but the volume of imports in 1944 was less than a third of that of 1937 and the volume of exports just under half. The ending of the war in Europe had an immediate effect on external trade, which in 1945 surpassed in value any year after 1931.

Financially the ten years showed some remarkable results. At the beginning of the period (March 1937) the annual expenditure was £31,000,000 and it showed little change until 1940, when it began to reflect the heavy defense and other charges. It then rose steadily until in March 1946 it was £53,000,000 (including £3,000,000 voted for the relief of distressed Europe). Only one loan was raised during the six war years, £8,000,000 in 1942; the rest of the war charges were borne on current taxation and small-scale borrowings. As a result the financial position of the country was strong in 1946.

Four General Elections.—The ten years were, apart from international events and their repercussions, lively political years. No fewer than four general elections were held and two presidential elections, one of them contested. Eire's electoral system—adult suffrage with proportional representation—was designed to encourage the smaller par-

ties. The effect was that the strongest party had difficulty in securing a workable majority. The William T. Cosgrave administration (1922–1932) and the De Valéra administration were alike embarrassed by this.

In June 1937 a normal general election was held, as the five-year term since Jan. 1933 had almost come to an end. The state of the parties after the election was Fianna Fáil (government party) 69; Fine Gael (chief opposition party) 48; Labour 13; Independents 8. After the election of the speaker, Fianna Fáil was in a minority in a house of 138, and in May 1938 it was deleated by one vote on a motion it had made one of confidence. It appealed to the country and gained eight seats, while all other parties lost. The figures were: Fianna Fáil 77; Fine Gael 45; Labour 9; Independents 7. After the 1938 election the Dáil ran its full life and the house was not dissolved until June 1943.

War shortages, restrictions, etc., caused the government party and the principal opposition to lose heavily while a new party of small farmers (Clann na Talmhan) and Labour gained. The result was Fianna Fáil 67; Fine Gael 32; Labour 17; Clann na Talmhan 14; Independents 8. Fianna Fáil was in a minority, though by far the largest party. It formed a government and in May 1944 was defeated, again by one vote, on a major bill. The president accepted

De Valéra's request for a dissolution (the constitution empowered the president either to do this or to send for the leader of the opposing combination) and the result of the ensuing general election showed a striking gain for the government party. Labour, which had split into two groups, and the Farmers each lost five seats. The figures were: Fianna Fáil 76; Fine Gael 30; Labour 8; National Labour 4; Clann na Talmhan 9; Independents 11. Owing to successes at by-elections, the figures by the end of 1946 were: Fianna Fáil 78; Fine Gael 28; Labour 8; National Labour 4; Clann na Talmhan 10; Independents 10.

The presidential elections were held in 1938 and 1945. In the first there was no contest. All parties agreed that Dr. Douglas Hyde, founder of the Gaelic league and among the foremost Gaelic scholars, should be first president of Eire under the new constitution. He was elected by acclamation on May 4, 1938, and took office in a colourful ceremony on June 25. The term was set at 7 years and in 1945 Dr. Hyde, being then 84, retired. The second presidential election was a three-cornered one. Fianna Fáil put forward the Tánaistè, or vice-premier, Seán T. O'Kelly; Fine Gael nominated General Seán McKeon; and Dr. Patrick McCartan stood as an Independent. Each of the candidates had taken a notable part in the Irish struggle for independence. The result of the voting was: O'Kelly 537,965, McKeon 335,539, McCartan 212,791. The lowest candidate was eliminated and his transferable votes distributed with the final result: O'Kelly 565,165, McKeon 453,425.

Important Legislation.—The ten years were marked by the passing of much important legislation. In 1937 a bill was passed controlling prices of many commodities. In 1938 an Irish Red Cross society was established by law. In the same year workers were given a statutory right to holidays with pay and a bill was passed improving the conditions under which shop assistants worked. In 1939 a central board to develop tourism was set up and financed by the state, and a comprehensive Town Planning act was passed. In 1940 an act extended the principle of city management'to the county councils. In that year also the Dublin Institute of Advanced Studies with its two schools of mathematical physics and Celtic studies was established by legislation. A means for amalgamating too numerous trade unions and easing the friction from interunion rivalry was provided by an act of 1941. A central bank was established in 1942. In 1943 legislation of the last century dealing with the sale of intoxicating liquor was codified and mod-

Children's allowances were provided by an act of 1944; in the same year an important measure amalgamated all public transport in Eire. Aid for Europe at the rate of £3,000,000 a year was provided first in 1945. In the same year provision was made by legislation for the hydroelectrical development of other rivers in addition to the Shannon and the Liffey, and later another act set up the turf board to direct the production of electricity from peat on a scale almost equal to the output of the Shannon. In 1945 also a new and up-to-date system for the care and cure of mental diseases was instituted by legislation.

In 1946 the most important decision of Dáil Eireann was by unanimous vote to authorize the government to apply for Eire's admission to the United Nations (this application was unsuccessful through the opposition of the U.S.S.R.). An Industrial Relations act which provided labour courts for the pacific settlement of labour disputes came into operation on Sept. 23, the date on which the

emergency powers order pegging wages was revoked. The reorganization of all harbours and ports was provided for in another 1946 act, and provision was made for their future development. New legislation was passed for the further extension of air traffic under the two Irish companies, Aer Rianta and Aer Lingus, which in Dublin and on the Shannon had established two of the most modern airports in Europe.

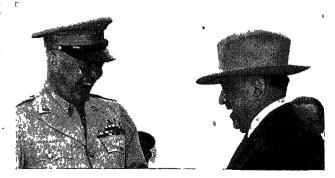
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Eisenhower, Dwight D.

Eisenhower (1890-), U.S. army officer, was born Oct. 14, 1890, at Denison, Tex. He was admitted to West Point, graduating in 1915, and during World War I was an instructor at several U.S. army camps. After graduating from the Army War college, he served in the Philippines as Gen. Douglas MacArthur's chief of staff. In June 1942 he was given command of the U.S. headquarters in England and was promoted to the rank of lieutenant general. He commanded U.S. forces that landed in North Africa, Nov. 8, 1942, and on Feb. 6, 1943, was made commander of all Allied forces in North Africa; five days later, he was made a full general. Under his leadership, Allied armies destroyed the axis armies in Tunisia, conquered Sicily and invaded Italy. These impressive victories led to his appointment as commander in chief of Allied invasion armies, announced Dec. 24, 1943. Eisenhower shifted his headquarters to England, and launched the invasion of France June 6, 1944. By the end of the year his armies had retaken virtually all of France and Belgium and part of the Netherlands, and had penetrated Germany. On Dec. 15, 1944, Eisenhower was promoted to the newly established five-star rank of general of the army.

The Allies suffered a temporary setback in Dec. 1944 when the German counteroffensive in the Ardennes forest ripped a 60-mi. hole in the Allied line. His forces subsequently recemented the line, and Eisenhower then launched the grand offensive, Feb. 23, 1945, that collapsed the wehrmacht by May 7. Eisenhower, who was noted for his diplomatic as well as military skill, was

Mayor La Guardia of New York city welcoming Gen. Dwight D. Eisenhower at La Guardia airport on June 19, 1945, prior to a victory parade through the city



designated chief U.S. representative in the Allied military government for the rule of Germany, March 29, and moved his headquarters to Frankfurt-on-Main, May 26. In response to criticism of U.S. laxity in enforcing the denazification program, he ordered the removal of prominent former nazis from the civil administration. Eisenhower, favouring a unified command for the armed services and the maintenance of a peacetime army of 1,500,000, was named chief of staff of the U.S. army, succeeding Gen. George C. Marshall, on Nov. 20, 1945. In this position, throughout the rest of 1945 and the early months of 1946, he directed the greatest military demobilization program in U.S. history.

Elections

In the United States, the decade, 1937–46, saw the historic Republican party stage a slow but steady recovery to an approximate restoration of political balance between the two major organizations in the United States. It also witnessed a progressive disintegration of the heterogeneous elements—labour, liberal, farm, white-collar and political—which Franklin D. Roosevelt had fashioned into a national machine that proved unbeatable in the presidential contests of 1932, 1936, 1940 and 1944.

It seemed that the "Grand Old Party," like the Whigs, faced utter collapse after the debacle in the 1936 elections. Their presidential nominee, Alfred M. Landon of Kansas, had waged an ineffective battle, running on an outdated and conservative platform that took no cognizance of new conditions and needs. He carried only two states—Maine and Vermont. His ill luck gave birth to a political wisecrack that reflected the atmosphere of those days—"As Maine goes, so goes Vermont!" The electoral college tally was 523 for Roosevelt and 8 for Landon.

As an accompaniment of the national ticket's disastrous defeat, the G.O.P. lost heavily in congressional and state contests. They had emerged from the 1936 struggle with only 17 U.S. senators, 89 members of the house and 8 governors. They did not control the legislative or political machinery of a single great state or city. The Democrats owned the United States, politically and emotionally.

Flushed by his unprecedented triumph, Pres. Franklin D. Roosevelt startled and shocked both friends and enemies early in 1937 when he advanced a scheme for revising the structure of the supreme court of the United States by the addition of six members. He admitted that his plan for "packing" the high tribunal was an effort to liberalize it so that he could obtain decisions more favourable to his New Deal reforms. He characterized the admittedly conservative court as a "horse and buggy" institution operating in an automobile age.

Although his proposal was defeated—congressional conservatives and liberals rebelled against it—its promulgation tended to weaken the Democrats in the very hour of victory. It antagonized such distinguished party veterans as James A. Farley, then national chairman and postmaster general, Alfred E. Smith, Carter Glass and John W. Davis. It aroused hostility among labour and white-collar groups. It gave substance to opponents' recurring indictments that the president aspired to dictatorship. It was, as his advisers subsequently conceded, a major mistake of strategy, especially as deaths and resignations soon enabled him to name a majority of the court.

Nevertheless, the off-year (1937) elections showed no clear trend, although there were scattered signs of a conservative reawakening. In several states, notably New Jersey and Arkansas, the Democrats sent to the senate men with anti-New Deal sympathies.

Manhattan, New York county, gave a start to a comparatively young man destined for an important role in national affairs. The voters elected Thomas E. Dewey, the "Fusion" candidate, as district attorney. His antiracketeering achievements in that office won him the governorship of New York in 1942 and the Republican presidential nomination in 1944. Fiorello Henry La Guardia, another colourful figure, was re-elected as New York mayor by a majority of 450,000.

In 1938 the G.O.P. made comparatively impressive gains. The opposition increased its U.S. senate strength from 17 to 23 and its house membership from 89 to 169. It won 10 additional governorships, making a total of 18, and captured several key commonwealths—Pennsylvania (Arthur H. James); Ohio (John W. Bricker); Michigan (Frank Dwight Fitzgerald); Wisconsin (Julius Peter Heil); Minnesota (Harold E. Stassen). The only important states which the Democrats carried were New York, where Governor Herbert E. Lehman defeated Thomas E. Dewey, and California, where radical Cuthbert Olson won over Frank E. Merriam.

Also in 1938 occurred the "great Roosevelt purge." In resentment against their outspoken opposition to portions of his legislative program, Pres. Roosevelt campaigned openly, albeit contrary to the wishes of his political aides, against Sen. Walter F. George of Georgia, Sen. Ellison D. Smith of South Carolina, Sen. Millard F. Tydings of Maryland and Rep. John J. O'Connor of Manhattan, chairman of the powerful house rules committee. All except O'Connor were re-elected.

The Republicans continued to make small headway in the off-year of 1939. Although defeated for mayor of Chicago, Ill., by Edward Joseph Kelly, Dwight Green, the Republican nominee, polled 638,068 votes, a larger percentage of the total vote cast than had been given to his party by Chicagoans in the 1932 and 1936 presidential elections. In Cleveland, Ohio, the G.O.P. re-elected Mayor Harold H. Burton, who subsequently advanced to the U.S. senate, and, by appointment of Pres. Harry S. Truman, to the supreme court.

Third Term.—In 1940 the no-third-term tradition was thrown overboard. Pres. Roosevelt withheld his intentions until the last moment. Vice-Pres. John Nance Garner of Texas and James A. Farley of New York, each seeking the nomination for himself, opposed the third-term effort. Indeed, Farley was placed in nomination at the Chicago convention by Sen. Carter Glass of Virginia, Woodrow Wilson's secretary of the treasury. Largely in protest against the violation of the two-term tradition, Farley resigned as national chairman and postmaster general in July, to be succeeded by Frank Walker of Pennsylvania, a long-time, personal friend of Pres. Roosevelt.

Roosevelt was easily renominated, however. His personal selection for the vice-presidential nomination was Henry Agard Wallace of Iowa, then secretary of agriculture. Republican off-year victories in farm areas were partially responsible for the Wallace choice. He was also popular in labour and liberal circles.

The 1940 Republican national convention at Philadelphia, Pa., produced one of those rare and dramatic phenomena of U.S. politics—the spectacle of a rank, non-political interloper stealing the nomination from veterans who had been born and reared in the ancient G.O.P. homestead. There had been no similar performance since William Jennings Bryan, in 1896, won the Democratic presidential nomination with his "Cross of Gold" sermon.

Wendell L. Willkie was the political stranger's name. He had been head of Commonwealth & Southern, a private utility concern that had battled the Roosevelt administration's public power program. He was a Wall Street lawyer who had never before taken an active part in politics. He had the backing, it seemed, of nobody but personal admirers, youthful political amateurs and gallery rooters at the Philadelphia convention. He also had a strong asset in his own right—a fresh, vivid, explosive personality.

But the historic fact is that Willkie entered the race with powerful political and financial support of the kind that counted. His candidacy seemed to be a spontaneous combustion affair only because of skilful management. He was known to share Pres. Roosevelt's views on international matters (pro-British, anti-Hitler), and, therefore, he had helpful friends in important places.

He claimed only a scattering of pledged delegates, however, when the convention assembled. The leading candidates in the early balloting were Gov. Dewey of New York, Sen. Robert A. Taft of Ohio and Sen. Arthur H. Vandenberg of Michigan. But Willkie was not to be stopped. The galleries, editorial writers and plain people on the street demanded this dark horse entry, their imagination apparently stirred by his strange and daring tactics, his seeming sincerity and selflessness. His reluctant running-mate was Charles L. McNary, then Republican leader of the U.S. senate.

It was a peculiar campaign because there was no fundamental disagreement between candidates Roosevelt and Willkie. Each favoured the same foreign policies, Willkie merely demanding less secrecy about aid to the Allies. He did charge that the administration's program was leading the nation into war, but he subsequently admitted before a congressional committee that this was only "campaign oratory."

Both men endorsed basic New Deal reforms, with Will-kie simply promising to administer them more economically and efficiently. The G.O.P. nominee suffered from the handicap of a rasping, untrained voice, which broke down in the midst of his speaking tour, whereas Roosevelt crooned over the radio with a delivery rarely matched in U.S. political combat.

Pres. Roosevelt also had the advantage of position. Although both he and Willkie assured the electorate that the United States would not become involved in the European war, Roosevelt had obtained repeal of the Arms Embargo bill, sponsored a strong national defense program and had begun to transform the nation into an "arsenal of democracy." His vigorous actions apparently appealed to people growing concerned over Adolf Hitler's victories and atrocities.

The president did not campaign in the conventional manner, but he was able to capitalize on his role of commander in chief by making numerous "inspection trips" to munition centres. He also delivered several timely radio talks. On these tours and in his broadcasts he never mentioned his opponent by name.

Roosevelt, in short, assumed a nonpolitical stance. He ran as the "man on horseback" in a world crisis. He strengthened this impression by forming a virtual "coalition government" on the eve of the Republican convention. He named as secretary of war Henry L. Stimson, who had been Herbert Hoover's secretary of state. For head of the navy department he chose Frank Knox, who had been Alfred Landon's running mate in 1936. He also appointed numerous Republican industrialists to key

posts in the emergency agencies which he created in preparation for possible involvement in World War II.

Despite his disadvantages, Willkie made a respectable run. He polled 22,304,755 votes, or 44.8% of the total (as against 27,243,466 for Roosevelt), and he got 82 electoral ballots. Moreover, had it not been for Roosevelt's overwhelming majorities in approximately 12 great industrial centres, where his labour-liberal-racial supporters enabled him to win those states' electoral votes, he would have been defeated.

Roosevelt and Willkie eventually became such close associates that the president sent his 1940 rival on an around-the-world trip as a diplomatic emissary. Willkie loyally supported both the preparation for and prosecution of World War II, and, before his death in Oct. 1944, he had thrown his great personal influence into the movement to transform the G.O.P. from a noninterventionist into an interventionist organization.

John L. Lewis's desertion of Roosevelt in the 1940 struggle provided a spectacular touch to the campaign, although it had no visible effect on the outcome. Although a Republican, the head of the United Mine Workers had been an ardent New Dealer in 1932 and 1936. In the latter year his labour organization loaned and contributed \$500,000 to the Democratic national committee.

The friendship between Pres. Roosevelt and the miners' boss was first strained during the sit-down strikes in Detroit, Mich., automobile plants in early 1937, when the chief executive frequently expressed irritation over the strikers' tactics. Moreover, the two men were so alike in their theatrical temperaments that a permanent alliance was an impossibility. In her post-Roosevelt memoirs, Frances Perkins, secretary of labour during this era, declared that Lewis urged his own nomination as vice-president on Roosevelt in 1940; she intimated that Roosevelt's refusal motivated the Iowa-born Welshman's walkout.

Despite last-minute appeals by Roosevelt in a White House interview, Lewis urged his followers in a nation-wide radio speech to vote for Willkie. His major charge was that the administration was heading the nation into war. There was no evidence, however, that his attitude affected the vote in the coal-mining regions.

In his radio address Lewis promised—or threatened—to resign as head of the Congress of Industrial Organizations if F.D.R. were re-elected. He kept his pledge, and his old friend and vice-president of the U.M.W., Philip Murray, was elected in his stead.

The Lewis defection eventually had its effect on national politics. As he turned away from the Roosevelt administration, the C.I.O., under the leadership of Murray and Sidney Hillman, then head of the International Ladies Garment Workers union, aligned itself even more closely with the party in power. For a while the American Federation of Labor remained neutral.

Postwar labour difficulties, and especially Pres. Truman's anti-inflation program, gradually alienated the labour element. Lewis brought his U.M.W. back into the A.F. of L. in 1945. Two of the railroad brotherhoods, angered over Truman's refusal to approve wage increases in late 1945, threatened to spend union funds to defeat him if he sought re-election in 1948. Several major C.I.O. units protested volubly against the administration's failure to hold down postwar prices, arguing that increased living costs had offset their pay boosts. Growing labour dissension and dissatisfaction became a serious problem for Democratic political strategists after V-E and V-J days in 1945.

Willkie's refreshing personality and philosophy, even though hard-boiled Republicans resented him, had aided

the party in its slow regrowth. In the 1940 contests the G.O.P. gained 5 U.S. senate seats for a total of 28. It lost 7 in the house, reducing its membership to 162. It boosted its gubernatorial quota from 18 to 20. It held state control in 20 of the 36 commonwealths outside the "solid south."

Congressional and state contests in 1942 returned the Republicans to the status of an effective opposition force. They won 3 additional governorships for a total of 23. They gained 10 additional senate seats, giving them a representation of 38. In the house they increased their representation to 209, or only 9 less than a nominal majority.

Gains for Conservatives.—As a matter of fact, the G.O.P. gain in 1942 gave conservatives voting control of both branches of congress. Capitol Hill supported full prosecution of World War II without any partisan spirit or division, but the close margin in house and senate meant an end to the era of New Deal reform. An alliance of reactionary southern Democrats and Republicans was usually able to outvote or outmanoeuvre the administration forces, and this alignment persisted into the postwar period.

The Democrats' 1942 losses were largely because of the war's irritations and pressures. The major factors held responsible for Republican resurgence were: (1) resentment over rationing and restrictions on the sale of foods, gasoline and other everyday products; (2) antagonism in agricultural areas over administration refusal to include farm-labour costs in fixing the parity price; (3) a general belief that Washington was coddling organized labour for partisan purposes; (4) hostility toward federal bureaucracy and regimentation; and (5) general dissatisfaction with the progress of World War II.

The Republicans won additional governorships in 1942 in such important states as New York, California, Michigan, Connecticut and Idaho. Two of the most prominent personalities whom the G.O.P. placed in power were Gov. Thomas E. Dewey at Albany, N.Y., and Gov. Earl Warren at Sacramento, Calif. Dewey defeated John J. Bennett, Jr., his Democratic opponent, by 630,000 votes, becoming the first Republican governor of New York in 20 years. Besides Gov. Dewey and Gov. Warren, other Republican figures were brought or kept in the national political picture in 1942. Leverett Saltonstall of Massachusetts, John W. Bricker of Ohio and Harold E. Stassen of Minnesota were elected for third terms as governors of their respective states.

The Republican senate gains in 1942, although important because of their number, had another significance. Foreshadowing postwar political trends, brash newcomers retired respected and distinguished veterans whose seats had seemed as solid as Gibraltar. Sen. George W. Norris of Nebraska, a Capitol Hill patriarch and a Roosevelt ally, was ousted by Kenneth Wherry, an unknown automobile salesman. Chapman Revercomb defeated Sen. Matthew M. Neely of West Virginia, a violent liberal and "friend of the people." Homer Ferguson, whose one-man prosecution had helped clean up gangsters in Detroit, won over Sen. Prentiss Brown of Michigan.

Henry Cabot Lodge followed in the footsteps of his famous grandfather by trouncing New Deal representative Joseph E. Casey in the senatorial election in Massachusetts. In New Jersey the Hague machine suffered its first serious setback in years when Albert W. Hawkes, former president of the chamber of commerce of the United States, defeated the Jersey City mayor's offering, Sen. William H. Smithers.

Final tabulation of the 1942 vote furnished partial explanation for the Democratic losses. Examination of the

returns showed a surprising apathy on the part of an electorate which Roosevelt's personality and faculty for dramatizing public affairs had awakened to his own advantage. The total vote cast in the house contests was only 28,111,583, the smallest in any nation-wide contest in 22 years. The Republicans polled 14,217,320, or 50.6% of the congressional vote, while the Democrats corralled only 47.4%. It was still axiomatic that a small turnout was damaging to the Democrats.

The comparatively meagre attendance at the polls was attributed to several factors: (1) the presence in the armed forces of almost 5,000,000 men and women of voting age; (2) the industrial migration which made it physically impossible for millions to register and vote in their home communities; and (3) the preoccupation of people with their war jobs or other emergency responsibilities.

The Republican trend persisted in scattered 1943 contests, which were the first to be held in hours of Allied triumphs on all war fronts. The G.O.P. won numerous special contests for filling congressional, state and municipal vacancies. They recaptured many cities and counties which had been under Democratic rule since the appearance of Pres. Roosevelt on the political scene. Although still the minority party insofar as control of the legislative and executive branches of the federal government was concerned, the Republican party had become a solvent concern by 1943. As the year closed the G.O.P. had 208 members in the house, 37 in the senate and 26 governorships in the 36 states above the Mason and Dixon line.

Since both victorious and losing candidates in 1943 urged vigorous prosecution of World War II, that issue was not involved directly. The outcome appeared to reflect widespread discontent and dissatisfaction over the administration's handling of domestic problems, such as labour, prices, rationing, taxes, etc.

When Pres. Roosevelt was asked for comment on the Nov. 2, 1943, outcome, he replied that he was more interested in the war communiqués from the Solomon Islands and the newly established Italian battle front. Wendell Willkie interpreted the results as a rebuke to Washington, but Gov. Dewey said that Republican victories in his state had no national significance. Harrison E. Spangler, then Republican national chairman, welcomed the 1944 presidential year with this statement: "The Republican party is the resurgent, dominant, victorious party of the United States! It is a unified party looking to the future."

The year 1944, however, did not turn out to be the "future" foreseen by Chairman Spangler. In that year Franklin D. Roosevelt staged an amazing, second repudiation of the two-term tradition. Seeking four more years in the White House, he defeated Gov. Dewey by a popular vote of 25,602,505 to 22,006,278. The electoral college count was 432 for Roosevelt and 99 for the Dewey-Bricker slate.

Gov. Dewey, however, proved to be the strongest opponent the president had met. Except for Roosevelt and Willkie, Dewey received the largest vote ever given to a candidate for the White House. Roosevelt owed his triumph to two factors—the nation's engagement in a global war which the Allies seemed about to win, and the efforts of the Political Action committee, an affiliate of the C.I.O.

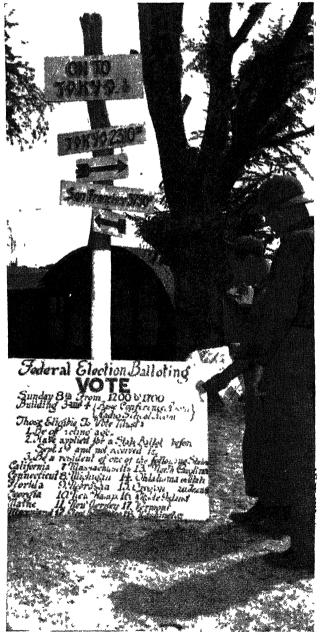
Millions of anti-New Deal conservatives, Republicans and Democrats, voted for Roosevelt because they felt that his experience and close association with the war effort would tend to bring speedy victory. They did not wish to risk a change of commander in chief in the midst of the

conflict.

But Sidney Hillman's P.A.C. workers were the Democrats' shock troops. When it appeared that the vote might be small, and that millions of transplanted war workers might not bother to go to the polls, Hillman's organization conducted a well-organized and financed campaign for a record enrolment and election day turnout of union labour members. Indeed, Roosevelt might have lost such electorally important states as Massachusetts, New York, New Jersey, Pennsylvania, Illinois and Michigan except for C.I.O. majorities in the great industrial centres of those states. The only major city carried by Dewey was Cincinnati.

U.S. armed forces' victories abroad contributed to the political victory at home. Gen. Dwight D. Eisenhower's penetration of the German reich and Gen. Douglas A.

U.S. troops in the South Pacific studying the regulations for overseas balloting, prior to the presidential elections of 1944



MacArthur's landing on the Philippine island of Leyte led White House aides to remark, and only semihumorously, that "Ike and Doug are our two ablest campaigners."

Pres. Roosevelt's abandonment of Henry A. Wallace as his 1944 running-mate provided an exciting interlude in a generally dull campaign. Roosevelt praised and mildly recommended the Iowan's renomination, but when the municipal machine bosses—National Chairman Robert E. Hannegan, Mayor Edward J. Kelly of Chicago, Mayor Frank Hague of Jersey City and Edward F. Flynn of the Bronx, N.Y.—convinced the president that Wallace's "radical" views would damage the ticket in their bailiwicks, Roosevelt urged the convention to name either Justice William O. Douglas of Oregon or Sen. Harry S. Truman of Missouri, then chairman of the special senate commit tee investigating the national defense program. He put Douglas first.

James Francis Byrnes of South Carolina, then war mobilization and reconversion director, was an eager candidate for second place on the ticket, but Hillman turned thumbs down on him because of his southern and supposedly antilabour background. Ironically, it was Sen. Truman who visited Hillman in his hotel suite at Chicago in an effort to obtain his support for the Byrnes nomination.

"We cannot afford to take a chance on nominating Mr. Byrnes," said the P.A.C. chairman.

"We cannot afford to take a chance on renominating Mr. Wallace," retorted Truman. "Whom will you support?"

"You," replied the labour boss.

With Roosevelt-Hillman backing the Missourian won the nomination that landed him in the White House upon Pres. Roosevelt's death on April 12, 1945.

In his nomination acceptance speech, which was delivered by radio to the Chicago convention from the San Diego, Calif., naval base, Pres. Roosevelt declared that he would not have the time or inclination to campaign "in the usual partisan sense." But he reserved the right to correct opposition misstatements and to report to the U.S. people on matters of national moment.

Roosevelt vs. Dewey.—Roosevelt seemed to take Dewey's candidacy lightly as the campaign opened. But, according to the memoirs of his personal and political associates, he became worried over October reports that his opponent was gaining strength. The president forswore his attitude of aloofness and took to the stump. Wartime censorship on his movements was abandoned temporarily.

Besides delivering six major political speeches, he toured the metropolitan areas of New England, New York, New Jersey and Pennsylvania in an open automobile in cold, biting rains. It was generally believed that he sought to answer by this physical challenge to the elements whispered suspicions that his health would not permit him to handle a man-killing assignment for four more years.

Pres. Roosevelt planned and executed his last-minute offensive like the political David Belasco he was. He never mentioned Dewey by name, but he heaped ridicule on the New York governor by innuendo. He stressed his own experience as against his foeman's youth, thus transforming Dewey's attack on the "tired old men at Washington" from a liability into an asset.

Roosevelt recalled the G.O.P.'s record of nonintervention after World War I and its sabotage of the League of Nations. He contrasted the apple-selling days of the Herbert Hoover regime with a 1944 national income of \$150,000,000,000. He recounted U.S. feats of heroism on the European and far eastern fronts and lauded domestic

production of arms. He wound up by promising 60,000,000 jobs in the postwar period. His spellbinding speeches won back numerous elements which seemed headed for the Republican column before he struck out forcefully and persuasively.

Nevertheless, Roosevelt and Dewey rarely came to grips on major issues. The Republicans' 1944 platform virtually endorsed the basic New Deal economic, social and labour reforms. So, after giving faint praise to his opponent's accomplishments Dewey challenged chiefly the administration of the federal machinery. He declared that Washington was run by "tired and quarrelsome old men" and maintained that it was "time for a change."

The Democrats surprised even themselves by gaining 21 house seats in the 1944 struggle and by losing only 1; in the senate they also fared well in state contests, winning back the governorships of Ohio, Massachusetts, Missouri, Idaho and Washington.

The 1944 outcome was interpreted as evidence that the U.S. people favoured scrapping of the historic policy of nonintervention. The voters retired three senators—John A. Danaher of Connecticut, James J. Davis of Pennsylvania, Gerald P. Nye of North Dakota, and three house members—Hamilton Fish of New York, Stephen A. Day of Illinois and Melvin J. Maas of Minnesota—who campaigned on a platform of "no foreign entanglements."

The 1944 election also carried a warning to the Democrats. It demonstrated that the personality and political genius of only one man—Franklin D. Roosevelt—could cement two wholly hostile and incongruous groups within their party. Relying on the sentimental support of the conservative, even reactionary south, Roosevelt directed his appeal to union labour and liberal elements north of the Mason and Dixon line. So wholeheartedly did they respond that he would have been re-elected easily even without the south's 127 electoral ballots.

Off-year elections in 1945 were scattered and confined to local battlegrounds, but they showed a trend which became more marked with the end of World War II. They indicated a slight defection from the Democratic party as represented by the Truman administration. It was a natural reaction, perhaps, to a political regime which had held power for so long, to the end of the patriotic and emergency pressures of World War II and to the disappearance of such a magnetic leader as Franklin D. Roosevelt.

The voters began to show less respect for old-fashioned partisan and clubhouse ties. The late Roosevelt's gay and even whimsical spirit of political independence and irresponsibility, as well as the volcanic emergence of postwar harassments and problems which transcended party thought and boundaries, hastened and intensified this process of ballot-box bootlegging.

The most notable and permanently significant development, in the opinion of expert observers, was the new, vigorous and self-conscious aggressiveness of organized labour, especially the C.I.O. The unions had achieved a balance-of-power position in many populous industrial centres where, as they had done for Roosevelt in the 1940 and 1944 contests, labour majorities determined the outcome in electorally strategic states, and, therefore, in the nation.

The November mayoralty elections in Detroit and New York supported the politicians in these general deductions, especially with respect to labour's new political power and role. As great industrial and cosmopolitan centres, they served to supply some insight into the mental and emotional processes of the postwar voters.

In the automobile capital Mayor Edward J. Jeffries was re-elected for a fourth term over Richard T. Frankensteen, vice-president of the Automobile Workers of America, a C.I.O. union. It was organized labour's first attempt to elect one of its officials to such a high public office.

Mayor Jeffries, after what he called a "nasty fight," won by 57,000 in a total vote of 501,047, the largest number of ballots ever cast in a Detroit municipal election. Although local contests in Henry Ford's city were supposed to be conducted on a nonpartisan basis, Republican and Democratic conservatives united behind the mayor. Democratic National Chairman Robert Hannegan, the local Democratic organization and the C.I.O.'s Political Action committee supported Frankensteen.

The labour candidate suffered from the series of strikes which had closed many Detroit plants during the campaign. Nevertheless, he polled 215,000 votes, or enough to become the deciding factor in state or national contests in Michigan.

In New York the Democrats closed ranks to include Tammany hall bosses, the New Deal hierarchy and even James A. Farley, and recaptured city hall after 12 years of La Guardian exile. They named William F. O'Dwyer, erstwhile Brooklyn policeman and famed prosecutor of Murder Syndicate, Inc., as their candidate. The Republicans ran Judge Jonah Goldstein, a former Democrat, largely at the behest of Gov. Dewey.

In personal protest against both the regular slates, which he denounced as "reactionary," retiring Mayor La Guardia entered Newbold Morris, a brilliant and civic-minded member of the La Guardia cabinet.

It was a walkaway for O'Dwyer. He rolled up 1,119,225 votes against 434,050 for Judge Goldstein and 399,437 for Morris. It was the largest majority any Democratic candidate had ever achieved. The Republican vote was the smallest since 1917. The demonstration for Morris, who had neither political funds nor organization, was regarded as a tribute to the excellent and public-spirited administration which Mayor La Guardia, for 12 years, had given to the nation's greatest city.

The La Guardia-Morris demonstration, as well as the support he obtained from independent labour elements, had a deep effect on Mayor O'Dwyer. He apparently heeded Mayor La Guardia's analysis of the results as a "sentence of death on machine politics and control." Mayor O'Dwyer and Tammany politics were at loggerheads only a few months after he took office. Following the good government performance of the "Little Flower," his Democratic successor apparently aimed at the same high standards of municipal management.

The Republicans carried all three special congressional elections which were held after Truman entered the White House—in Montana, Illinois and New Jersey. Herbert E. Brownell, whom Gov. Dewey named as Republican national chairman in 1944, derived satisfaction from the Montana and New Jersey results because the Democratic standard-bearers ran on a "Support Truman" platform. Commenting on the 1945 tests of public sentiment, Brownell said: "When the votes were counted, our party retained practically everything it had before, and gained several strategic offices previously held by the Democrats."

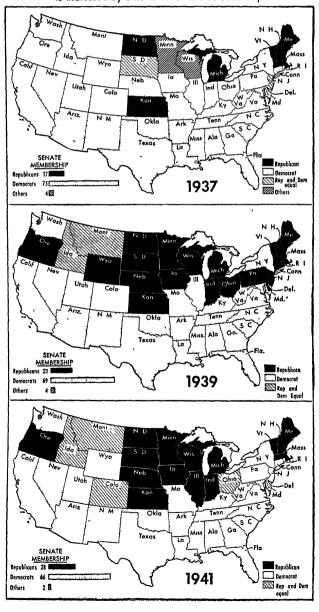
Among the notable political casualties of the turbulent year 1946 was the fall of the "House of La Follette," at least temporarily, with the result that no member of this distinguished Progressive brood, for the first time in more than 50 years, held high public office. The younger brother,

Philip, was defeated in 1940 when he sought a third term as governor of Wisconsin, and soon went off to war.

"Young Bob," sensing the decline of the Progressive cause and spirit in Wisconsin, disbanded the party which his father had founded, and announced his return to the G.O.P. But the conservative wing rebuffed his overtures and nominated its own candidate. Sen. La Follette then entered the Republican senatorial primary, but he was defeated by a narrow margin. His associates blamed his defeat on Milwaukee Communists, who retaliated for his outspoken senate attacks on Moscow's postwar program of aggression and nonco-operation with the western powers in the formulation of world peace.

Three other old-time Progressives and noninterventionists fell by the wayside in 1946 primaries. They were Sen. Burton K. Wheeler of Montana, Sen. Henrik L. Shipstead of Minnesota and former Sen. Gerald P. Nye

Maps showing composition of the U.S. house of representatives at the start of the 75th, 76th and 77th congresses. Senate membership is indicated by bars at lower left of each map



of North Dakota, who tried to make a comeback after his 1944 defeat. Although local issues and factors contributed to the trio's reverses, the outcome in this hitherto noninterventionist area was interpreted as additional evidence that the U.S. people favoured greater participation in world affairs.

The Shipstead setback appeared to strengthen the political stock of Harold E. Stassen, former governor of Minnesota, who had returned from his navy assignment as an avowed candidate for the Republican presidential nomination in 1948. As Wendell Willkie's floor manager at the 1940 Philadelphia convention and a Roosevelt representative to the San Francisco assemblage which gave birth to the United Nations, Stassen had fallen heir to the Willkie mantle. He was a "one world" apostle.

Stassen suffered a slight reverse when he backed Gov. Dwight Griswold of Nebraska against Sen. Hugh Butler, a leading noninterventionist, in that state's senatorial primary. Butler won easily. It had been expected that Stassen would make the run against Sen. Shipstead in Minnesota, but he entered his political protegé, Gov. Edward J. Thye. The Thye triumph over Shipstead placed Stassen in the 1948 race, along with such men as Gov. Dewey of New York, Gov. Warren of California, Senators Robert A. Taft of Ohio, Arthur Vandenberg of Michigan and John W. Bricker of Ohio.

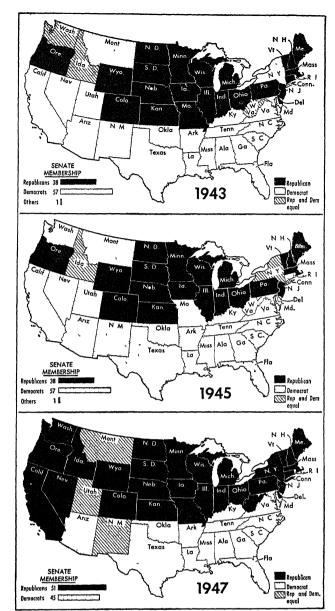
Meanwhile, the Democrats began to face internal difficulties and prospective disintegration. Rifts within the Truman administration, involving liberals and conservatives, Rooseveltian New Dealers and Truman loyalists, pro-soviet and anti-soviet factions, reflected the spirit of postwar political unrest and suspicion. Henry L. Morgenthau, for instance, quit his treasury post in a huff when he learned from Truman that his services would be wanted for only a few months.

Harold L. Ickes resigned as secretary of the interior after a sharp and sensational dispute with Pres. Truman over the latter's nomination of Edward W. Pauley, a California oil operator, to be undersecretary of the interior. Ickes charged that the president, in urging him to minimize his charges of lobbying and political bribery against Pauley, had asked him to sacrifice integrity for political expediency. Other Roosevelt holdovers were gradually replaced by men of Truman's preference, and it was generally agreed that the replacements were of a conservative rather than a liberal order.

These political emigrés, or many of them, immediately took to the writing of columns, magazine pieces and memoirs, to the radio and to formation of political organizations dedicated to the preservation and promulgation of Roosevelt's memory and program. Through their speeches and literature ran a thinly-veiled suggestion that Truman, by his appointments and policies, was deserting his predecessor's principles. Among those who gently chided the president were members of Roosevelt's own family, including Mrs. Roosevelt, James, Elliott and Franklin, Jr.

Two Roosevelt sons indicated that they intended to make politics a career, if possible. James became Democratic state chairman of California and joined with Harold Ickes in founding the Independent Society of Scientists, Artists and Professional Men. Franklin, Jr., was a leading figure in forming the American Veterans committee, a self-designated liberal organization of World War II G.I.'s.

It remained for unpredictable Commerce Secretary Wallace, however, to freeze Democratic politicians' spines. In mid-September, less than two months before the vital



Composition of the U.S. house of representatives at the start of the 78th, 79th and 80th congresses. Senate membership is indicated by bars at lower left of each map

congressional elections of 1946, he spoke at Madison Square Garden, New York, under the auspices of the C.I.O.'s Political Action committee and the Ickes-Roosevelt Society of Scientists, Artists and Professional Men. Wallace urged a go-easy policy toward Russia, and his remarks were regarded as a frontal attack upon Secretary of State James Byrnes' attitude vis-à-vis Moscow. At the moment Byrnes was attending the Paris Peace conference, where he was advocating and pursuing a strong course against soviet aggrandizement that was diametrically different from Wallace's proposals.

In the midst of his address Wallace paused to emphasize that Pres. Truman had read and approved his stated sentiments. At first the chief executive supported Wallace. But when state department officials openly expressed their indignation, and when reports from Paris suggested a possible Byrnes resignation, Truman qualified his earlier endorsement of the Madison Square Garden utterance. He explained that he had merely approved the minor

cabinet member's right to express his viewpoint for what it was worth.

Through a subsequent misunderstanding between Secretary Wallace and the White House secretariat, Wallace next made public a letter which he had sent to the White House in late July 1946. This document, whose publication Truman tried to halt in vain, virtually denounced the administration's whole policy toward Moscow and charged that certain U.S. army-navy officers were already planning a war against the soviet.

The ensuing uproar forced President Truman to ask for Wallace's resignation, which he submitted immediately. Inasmuch as the Iowan had been retained in the cabinet because of his supposed popularity among liberals of all varieties—C.I.O. unionists, New Dealers, pro-Muscovites, etc.—the summary dismissal of the "apostle of the abundant life" provided a new and severe headache for Democratic political planners.

Defeat of 1946.—The 1946 congressional campaign presented a strange spectacle. Largely because of his political (not personal) unpopularity and his own blunders, Pres. Truman did not participate except for a hurried trip to Independence, Mo., to vote. He delivered no speeches and gave no interviews on the journey. He was the "forgotten man" of the struggle.

In an unsuccessful effort to preserve the enthusiasm and the line-up of New Deal days, National Chairman Hannegan made records of excerpts from Roosevelt's most stirring addresses and mailed them to Democratic candidates for use at local rallies. This stratagem inspired hostile barbs that even he had "repudiated" the Truman administration.

Wallace's earlier invitation to tour the country under auspices of the Democratic national committee was quietly withdrawn after his break with the White House, and he spoke in a few places under the aegis of the C.I.O. and certain "liberal" organizations. Ill luck dogged him. He told a California audience that former Gov. Stassen was such a "great progressive" that the Republicans disowned him. In Minnesota he branded Stassen as a "pseudoliberal." In New York he shocked listeners by proclaiming that Sen. James M. Mead, the Democrats' candidate for governor, could not be elected.

The Democrats suffered another handicap when a Moscow radio commentator urged support of all the C.I.O. nominees, who were chiefly Democrats. The soviet intervention, although disavowed by the Democrats, pointed up G.O.P. charges that the party in power was "tainted with Communism."

The Republicans based their campaign on "the three C's," a phrase coined by National Chairman Carroll Reece to embrace the three issues of "communism, confusion and controls." As the results of Nov. 5, 1946, were to show, these three questions were uppermost in the voters' minds, in addition to their normal desire for a "change."

Many Democratic leaders blamed Pres. Truman for the sweep of their defeat in local and national contests. His temporary endorsement of the Wallace pro-soviet speech, despite his subsequent repudiation, estranged every racial group antagonistic to Moscow—the Irish, Poles, Germans, Scandinavians and Balkan peoples. Industrial centres heavily populated by these elements—once Democratic strongholds—were swept by the opposition.

Truman's shift on the question of continued OPA (Office of Price Administration) control of meat contributed to the Democratic debacle. After insisting for

months that price ceilings had to be maintained he lifted them on Oct. 14. When choice cuts returned to the market almost immediately, the voters apparently concluded that he had miscalculated in the first instance. His wavering on these important foreign and domestic problems appeared to destroy public confidence in all Democratic office seekers.

The Republican "landslide" on Nov. 5 exceeded even the experts' expectations. The G.O.P. regained control of congress after a 16-year exile. It won or held all the important governorships, winning a total of 25. It carried great cities which had not gone Republican after 1928. It outvoted the Democrats by more than 3,000,000, a tabulation which included the top-heavy Democratic vote in Dixie.

The Republicans increased their senate membership from 59 to 51. They won those 12 places in the following key states: Massachusetts, New York, Pennsylvania, Delaware, Ohio, Missouri, Wisconsin, Minnesota, Montana, Utah, Idaho and Washington. They 10st the senatorial races by narrow margins in West Virginia and Wyoming.

The opposition boosted its house strength from 192 to 246, with 188 for the Democrats and 1 member for the American Labor party. Of the Democrats' representation of 188, 116 came from southern and border states. Only 72 were from outside Dixie.

Several prominent Republican figures immediately became prospects for the 1948 presidential nomination by reason of their tremendous pluralities in key states. They included Gov. Thomas E. Dewey of New York, Gov. Edward Martin of Pennsylvania, who was elected to the senate; former gov. John W. Bricker of Ohio, who was also sent to the senate; Sen. Robert A. Taft of Ohio; and Gov. Earl Warren of California. Another was Sen. Arthur H. Vandenberg of Michigan, who won easily without making a campaign.

The prospect of a division between the executive and legislative branches led Sen. J. William Fulbright of Arkansas to propose that Pres. Truman turn the government over to the Republicans. He suggested that Truman name a Republican as secretary of state and then resign, thus permitting the G.O.P. cabinet member to succeed him. The scheme did not appeal to Truman. It did, however, measure Democratic dismay and discouragement at the outcome of the election. (R. Tu.)

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Great Britain, British Commonwealth, Europe

World War II cast a long shadow before it, and the elections which were held in 1937-39 were dominated by two issues, the struggle of democracy versus political extremism, and policy in the event of war. In the British commonwealth, Australia, South Africa and Eire were considering rearmament and defense, and their attitude toward Great Britain should war occur. In Europe, democracy versus fascism was the main issue. In all countries economic questions were closely linked up with the world situation, trade agreements, currency problems, immigration, etc. During World War II elections expressed the solidarity of the peoples behind their leaders, in support of World War II in the case of the belligerent countries,

in support of democracy and against the forces of occupation in the case of some of the occupied countries, and in support of neutrality in Sweden. There was a tendency toward coalition governments as an expression of this unity. Criticism was mainly concerned with the administrative record of governments or aimed at a more vigorous policy rather than at direct opposition to government policy on matters of principle. Domestic issues took second place. After the end of World War II there was a resurgence of interest in domestic issues. In the countries which held elections, nationalization of industries was the biggest question. The elections were marked by the rise in importance of the Communist parties, particularly in France, Czechoslovakia, Bulgaria and Rumania. While the move to the left was general, as was strikingly shown in the British elections of 1945, the prevailing trend was toward social reform and socialism with a form of modified private enterprise, rather than toward a thoroughgoing communist state. Monarchy versus republicanism was an important issue in Belgium, Greece, Italy and Bulgaria. Clericalism versus anticlericalism played a considerable part in France and Italy, and to a lesser degree in Belgium, and in the confessional versus nonconfessional alignment in the Netherlands. Elections in the democratic sense were not held in Albania, Bulgaria, Estonia, Latvia, Lithuania, Poland, Portugal, Rumania, Spain or Yugoslavia during the period, the opposition either having been suppressed or having refused to support the elections.

Albania.—Elections were held on Dec. 2, 1945. The communist-sponsored Democratic Front was the only party presenting candidates, but independent candidates were permitted to stand. The Democratic Front secured 506,319 of the votes polled (93.18%) and all the 80 seats of the constituent assembly.

Australia.—Elections were held in Oct. 1937, Sept. 1940, Aug. 1943 and Sept. 1946, and a referendum was held in Sept. 1946.

On Oct. 23, 1937, the United Australia (Liberal) party won 28 seats, the Federal Labour party 20 and the United Country (conservative) party 17 seats. The main issue was defense. The government stressed co-operation with Britain and the importance of a bigger navy. Labour stood for freedom from foreign entanglements, self-reliance, local defense and a more powerful air force. Subsidiary issues were immigration and the removal of trade barriers. The Labour party placed greater stress on the protection of secondary industries and the limitation of immigration than did the government

On Sept. 21, 1940, the United Australia party suffered a setback: Labour won 32 seats, the United Australia party 23 and the United Country party secured 14 seats. All parties were united in support of World War II. The United Australia party and the United Country party had a common policy and appeal. The main issues were the government's administrative war record regarding gasoline rationing, subsidies to wheat growers and the terms on which the government acquired wheat from the growers.

On Aug. 21, 1943, the Labour party showed further gains, securing 49 seats, the United Australia party obtained 15 and the United Country party 10 seats. The election was fought primarily on the government's administrative war record, but with no major point of current war policy in question. Labour was attacked on bureaucratic methods and ill-conceived and overlapping administration.

On Sept. 28, 1946, the Labour party won 43 seats, the United Australia party 17 and the United Country party 12. The Labour party was against further large tax reduc-

tions. The opposition wanted strikes and lock-outs to be declared illegal and penalties enforced by a tribunal to be set up for the arbitration of disputes.

A referendum was held at the same time as the elections which sought to amend the constitution to give the commonwealth power to legislate on: (1) social benefits; (2) organized marketing of primary products; (3) conditions of employment in industry. The voting on (1) was 728,877 votes for and 584,486 against; on (2) 684,079 for and 622,850 against; and on (3) 657,426 for and 619,436 against.

Austria.—Elections were held in Nov. 1945 with the following results: People's (Catholic) party 85 seats, Socialists 76 and Communists 4. The main issue was right versus left. The socialists refused to fuse with the Communists and fight on a single list. The elections were regarded as in some sense a plebiscite on the issue "Russia versus the western powers."

Belgium.—Elections were held in April 1939 and Feb. 1946. On April 2, 1939, the Catholics (including Christian Democrats) won 73 seats, the Liberals 33, the Socialists 64, Rexists 4, Flemish Nationalists 17 and Communists 9. The Catholic party, still supporting a "freedom from alliances" policy, gained from the Rexists, who had held 21 seats in the previous election in May 1936.

In the first election after liberation, on Feb. 17, 1946, the Catholics (including the Christian Democrat party) still held the lead with 92 seats, the Socialists followed with 69; the Communists showed a large increase with 23 seats. The Liberals obtained 17. The Rexist and Flemish Nationalist parties were not represented. The main issues were domestic differences between the Socialists and the Communists on wage- and price-control policy. The Catholic party was opposed to nationalization. In the background was the Catholic support for a referendum on the return of the king.

Bulgaria.—Elections were held in March 1938, Nov. 1945 and Oct. 1946. On March 6, 13, 20 and 27, 1938, on the basis of the electoral law of 1937, 160 candidates were put up. Requirements were that they should be more than 30 years of age, neither Communists nor advocates of violent method. The vote was given to all males more than 21, and to all married women. There was no party organization. The election gave the government 104 and the opposition 56 seats in the parliament (Sobranje).

On Nov. 18, 1945, the Communist-sponsored Fatherland (Otechestven) Front gained 277 seats. The five parties forming the Fatherland Front put up a single list. The Agrarian Democratic and Independent Socialist parties which formed the opposition appealed to its supporters to boycott the election. According to the government, 86% of the electorate voted notwithstanding, and 80% of the votes were cast for the Fatherland Front. The elections were not recognized by Great Britain and the U.S.A. as having been free and the Bulgarian government was not recognized by these two powers.

A referendum on the monarchy was held on Sept. 8, 1946; 3,801,160 votes were cast for a republic, 197,176 for a monarchy, 119,168 votes were declared invalid; 91% of the electorate voted of whom 92.3% voted for the republic.

On Oct. 27, 1946, the parties representing the Fatherland Front won a total of 364 seats. They consisted of the Communists with 277 seats, the dissident Agrarians with 69 seats, the dissident Social-Democrats with 9, the Zveno Union (Army party) 8 and Radicals 1. The opposition parties obtained 101 seats. This election to shape the country's new republican constitution was not fought on a party program. The main issue was the methods of the

government. The opposition upheld personal liberty and the individual rights of the citizens and was particularly opposed to the control of the police by the Communists; opposition leaders declared that they took part in the election only to show that they were not afraid to enter the contest, and that there were sufficient irregularities to reduce the pro-Fatherland Front vote from 60% to 22%.

Canada.—Elections were held in March 1940 and June 1945. On March 26, 1940, the Liberal party had an overwhelming majority with 179 seats in a house of 245. The Conservatives secured 39, the New Democracy (including the Social Credit party) 10, the Co-operative Commonwealth Federation (the Labour party of Canada) 8 seats. All parties were united in support of World War II. The Conservatives criticized the government's war effort as not vigorous enough. They pressed for a "national" government or coalition. There was criticism from the left of the rigour with which Canadian defense regulations were being enforced. Suppression of free opinion was alleged.

On June 19, 1945, the Liberal party led with 119 seats but showed a decline. The Conservatives won 65 seats, the Social Credit party 13 and the Co-operative Commonwealth Federation made a striking advance with 28 seats. The main issue was conscription for war against Japan. The Conservatives supported conscription, the government was against it. Domestic reconstruction came to the front, the Co-operative Commonwealth Federation supporting nationalization of some industries and a greater degree of public control over others.

Czechoslovakia.-Elections were held in May 1935 and May 1946. On May 19, 1935, at the last prewar elections the political parties were returned to the chamber of deputies (300 members) as follows: National Unity 17, Agrarians 45, Traders 17, Czech Populists (Catholics) 22, Czechoslovak National-Socialists (Dr. Eduard Beneš's party) 28, Czechoslovak Social-Democrats 38, Communists 30, Fascists 6, Slovak Populists (Catholics) 22, German Henlein party 44, German Social-Democrats 11, German Agrarians 5, German Christian-Social party 6, Hungarians 9. In the elections to the senate (150 members), held on the same day, the results were as follows: National Unity 9, Agrarians 29, Traders 8, Czech Populists 11, National-Socialists 14, Social-Democrats 20, Communists 16, Slovak Populists 11, Henlein party 23, German Social-Democrats 6, German Christian-Social party 3, Hungarians 6.

After the liberation only four political parties in Bohemia-Moravia and four in Slovakia were allowed to exist legally. The Czech National and Agrarian parties and the Slovak Populist party were banned on account of their collaboration with the Germans. The general elections were held on May 26, 1946, and the distribution of seats in the constituent assembly (300 members) was as follows: Bohemia-Moravia: Populists 46, National-Socialists 55, Social-Democrats 37, Communists 93; Slovakia: Freedom party 3, Christian-Democrats 43, Labour party 2, Communists 21. The election represented a test of strength between eastern and western concepts of democracy. All parties agreed on nationalization measures, expulsion of minorities and the need for maintaining a coalition gov-The Populists and the National-Socialists favoured slower nationalization and more limited expulsion of Sudeten German skilled workers.

Denmark.—Three elections were held: in April 1939, March 1943 and Oct 1945.

On April 3, 1939, the Social-Democrats led with 64 seats in the lower house (Folketing), followed by the

Liberals with 30, the Conservatives with 26 and the Radicals with 14; 3 Communist candidates were also returned. The election of 1939 represented a struggle for power between coalition parties in the government, Labour and the Radicals. The government was in favour of the abolition of the upper house. In South Jutland (North Schleswig), on the frontier, there was a clash between the German (nazi) party and the Danes.

On March 23, 1943, the results followed very closely those of the previous election. The Social-Democrats again led with 66 seats, the Conservatives secured 31, the Liberals 28 and the Radicals 13 seats. This election was a demonstration of support for democracy and evidenced the defeat of nazi-dominated parties. All nazi parties presented themselves as the "United parties" and asked the electorate to vote for them, but they polled only 3.5% of all the votes. The electoral defeat of naziism was followed by the suspension of the cabinet on Aug. 29, 1943.

On Oct. 30, 1945, the Social-Democrats lost ground relatively while maintaining their lead with 48 seats; the Liberals won 38, the Conservatives won 26, the Radicals 11 and the Communists made a strong showing with 18, becoming a considerable party for the first time. Controversy centred on nationalization. There was a struggle between the Farmers' party (Liberals) and the Social-Democrats. Other issues were the frontier in South Jutland, the lowering of the age of franchise and the future of the upper house.

Eire.—Four elections were held: in July 1937, June 1938, June 1943 and May 1944.

On July 1, 1937, Fianna-Fáil, the government party, led with 69 seats in the Dáil Eireann; United Ireland (Fine Gael), the opposition, followed with 48; Labour secured 13; the Independents 8. The issue in 1937 turned on the economic results of Eamon de Valera's government and commonwealth relations. William T. Cosgrave, leader of the opposition, was in favour of ending the economic war with Great Britain. Approval of the constitution was not a controversial issue.

On June 17, 1938, De Valera's party, Fianna Fáil, held 77 seats; United Ireland lost 3 seats, securing 45; Labour and Independents also lost securing 9 and 7 respectively. The election was precipitated by De Valera's desire to gain a working majority in the Dáil instead of being dependent on the support of the Labour party. An arbitration board for the civil service was proposed by Labour and opposed by the government. Cosgrave attacked the Anglo-Irish agreement on its defense clauses and on the grounds of increased taxation involved in the upkeep of the defense ports.

On June 22, 1943, Fianna Fáil's representation fell to 67 seats and Fine Gael's to 32; the Labour party gained, securing 17 seats and Independents secured 8 seats; and the Farmers' party (Clann na Talmhan) increased from 1 to 14. Neutrality was not an issue. Personalities rather than politics dominated the scene. There was a challenge from Labour on wage and price control. Cosgrave put forward a plan for a national (coalition) government.

On May 30, 1944, Fianna Fáil won 76 seats, Fine Gael 30, the Farmers' party 9, the Labour party 8, National Labour 4 and Independents 11. The election followed the defeat of the government over the transport nationalization bill. Fine Gael stood for closer co-operation with Great Britain and the commonwealth. All parties were agreed on a policy of neutrality. Fine Gael called for a coalition government, but De Valera opposed this and

stressed the need for a strong government.

Finland.—Elections were held in July 1939 and March 1945. On July 1 and 3, 1939, the election to the diet (Eduskunta) followed the main lines of the previous election of July 1936 in which democracy versus fascism (represented by the I.K.L. or National Patriotic movement) was the main issue. The 1939 election represented a victory for the government bloc of Social-Democrats (85 seats), Agrarians (56) and Liberals (6); the National Coalition (Conservative) party won 25, and the Swedish People's party 18 seats. The I.K.L. declined to 8.

On March 17–18, 1945, at the first postwar election, the greatest gains fell to the newly formed Democratic People's Union, comprising those Social-Democrats who op posed the party's anti-soviet policy, the Small Farmers' party and the Communists. Out of 200 seats the People's Union won 49, the Social-Democrats kept 50 and the Agrarians 49; but the Liberals gained 9 and the Con servatives 28; the Swedish party retained 15. While all parties agreed on the necessity for establishing goodneighbourly relations with the U.S.S.R., there was a serious difference of opinion between the People's Union and all the other Finnish parties as to the best methods to achieve that aim.

France.—During the period 1937–46 three elections were held, all after the liberation, viz., in Oct. 1945, June 1946 and Nov. 1946. Those of Nov. and Dec. 1946 were held to elect the council of the republic, the new upper chamber taking the place of the former senate. Three referenda were held: in Oct. 1945, May 1946 and Oct. 1946.

On Oct. 21, 1945, the chief characteristic was the neckand-neck struggle between the Communists, who secured 146 seats, and the Catholic M.R.P. (Mouvement Républicain Populaire), which secured 142 (out of a total of 592). The Socialists followed with 133. When closely allied groups were added, the proportion was even more equal -152, 142 and 142. The Radicals won 25 seats as a group, and the old Conservatives about 70. The Socialists and Communists differed mainly on their attitude to soviet Russia. The main issue was the conflict between the M.R.P. and the Communists. A further issue was the attitude of the electors for or against Gen. Charles de Gaulle. All parties of the Resistance movement supported a program of nationalization of basic industries. A referendum was held at the same time as the elections to decide (1) whether the national assembly should be a constituent assembly, and (2) whether a certain provisional constitution should be accepted. The M.R.P. and the Socialists voted "yes" on both questions, the Communists were in favour of the first but not the second, and the Radicals were against both. The results of the referendum were as follows: first question: 15,656,283 "yes" and 596,743 "no"; second question: 10,847,925 "yes" and 5,381,106 "no."

On May 5, 1946, a referendum was held on the draft constitution. The M.R.P. was against it, favouring a stronger upper chamber and wider powers for the president of the republic. Socialists and Communists supported it. The draft constitution was rejected by 10,488,059 "no" against 9,327,073 "yes"; majority against, 1,160,986.

On June 2, 1946, a second constituent assembly was elected. The election campaign hinged increasingly on the issue for or against communism. The Communists won 150 seats (with an affiliated group), the M.R.P. rose to 163; the Socialists obtained 128, showing a relative decline; the Radicals (appearing, with affiliated groups, as the R.D.G. or Rassemblement des Gauches) won 47 seats. The Republican party of Liberty (P.R.L.) and other right wing parties obtained 67 seats. Other issues of the cam-



French nuns at the polls for the referendum vote on the proposed French constitution, May 5, 1946. Balloting was heavy and the vote very close; the constitution was defeated by little more than 1,000,000 votes out of the approximate 20,000,000 cast

paign were the government's record regarding the budget, wages and price control. There was controversy over the methods and the extent of nationalization. Catholic support was put forward for religious education (although the M.R.P. did not adopt this in their program).

In the referendum that was held on the new draft constitution on Oct. 13, 1946, the voting in France proper, Corsica and the three départements of Algeria, was as follows: voters on register 25,379,917, votes cast 17,441,033, in favour 9,120,576 (52.3% of votes cast, 39.9% of voters on register), against 7,980,333, abstentions 7,938,884 (31.28%).

On Nov. 10, 1946, the constitution having thus been adopted, elections to the national assembly were held. The Communist party showed a new relative gain and secured 182 seats out of 619, the M.R.P. obtained 172, the Socialists declined to 101. The right wing groups and the R.D.G. both increased their strength—the former obtained 85 seats, the latter 69. At these elections 23 more seats were given to metropolitan France and four more to Algeria than in the previous elections. The Communists regained their former position of leading party. Opinion crystallized to the left and right, and "middle-of-the-road" Socialists suffered a decline.

On Nov. 24, 1946, preliminary elections were held for the creation of an upper chamber, the council of the republic, which with the national assembly was to join in electing the president of the republic. Out of a total of 18,022,223 votes cast, the Communists secured 29%, the Socialists 16.7%, the M.R.P. 26%, the R.D.G. 8.2%, the right wing groups 7.7% and various small groups, often nonpolitical, 12.4%. On that day about 84,600 grands électeurs were elected. On Dec. 8 the grands électeurs, together with local conseillers-généraux and the deputies in the assembly for that département (administrative subdivision of France) voted for 200 metropolitan and 14 Algerian members of the council of the republic. The distribution of seats was as follows: Communists 61, Socialists 37, R.D.G. 25, M.R.P. 62, right-wing groups 20, left Independents 2, Algerian Moslems 7. The remaining 101 seats were distributed later, and for these the national assembly elected 42 councillors on Dec. 20.

By the new procedure it was hoped to avoid the opposition between a conservative senate and a radical chamber, a characteristic product of the 1875 constitution. Measures passed by a majority of the assembly were to be passed by a majority of the council. Neither the Communists nor the Socialists desired the creation of a second chamber, and the new, constitutional arrangement was in the nature of a compromise.

Germany.—Although no national elections took place in occupied Germany, local elections were held in Sept. 1946 for borough and parish councils. In the British zone independent candidates gained the largest number of seats. The Christian-Democrats led with more than 20,600; the Social-Democrats got 16,000 seats; the Communists less than 700 seats. In the French zone the Christian-Democratic Union led with 1,273,574 votes; Social-Democrats polled 563,507; Communists 180,466; Democrats 87,015; others 637,849. In the Russian zone in Mecklenburg the Socialist Unity (Communist) party gained 69% of the poll, the Christian-Democrats 16% and the Liberal-Democrats 10%. In Brandenburg the Socialist Unity party got 820,600 votes; the Christian-Democrats 259,038; Liberal-Democrats 236,287, other groups 52,942. On Oct. 21, 1946, municipal elections in Berlin gave the Social-Democrats 999,170 votes (48.7%), the Christian-Democrats 454,202 votes (22.1%), the Socialist Unity (Communist) party 405,992 (19.8%), the Liberal-Democrats 192,527 (9.4%). In all 20 boroughs of Greater Berlin, Social-Democrats were the leading party. Between 90% and 95% of the electorate voted.

Great Britain.—The election held on July 5, 1945, was the first since 1935. Out of 640 members, the Labour party gained a majority with 393 seats (instead of 163 at the time of dissolution), the Conservatives held 197 (instead of 373), the National Liberals 13, the Liberal party 11. The Conservatives attempted to fight the election mainly on the war record of the national (Coalition) government and Winston Churchill's part in it, the war with Japan and "government interference" in private enterprise. The Labour party stressed social security, full employment, state medical service and nationalization of the principal industries.

Greece.—For the first time since Gen. John Metaxas' coup d'état in 1936, a free election was held on March 31, 1946; a referendum was held on Sept. 1, 1946.

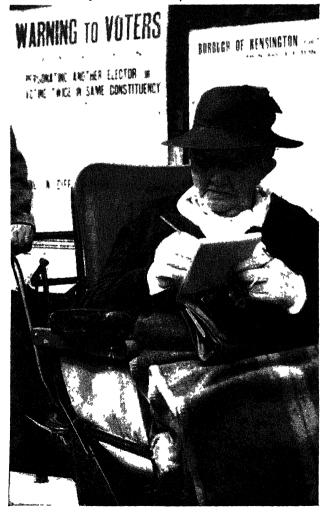
The main issue in the election was monarchy versus republic and right versus left. The Populist (Royalist) party

gained a large majority, with 206 seats (out of 354), the National Political Union (a coalition of three small republican parties led by Sophocles Venizelos, George Papandreou and Panayotis Kanellopoulos) secured 68, the Themistocles Sophoulis Liberals 48, National Resistance (Colonel Napoleon Zervas) 17, the Independents 11.

On Sept. 1, 1946, a referendum was held to settle the question whether Greece should have a republican or monarchical government: 1,691,592 votes were cast, of which 1,170,470 were for the monarchy. There were 346,862 blank voting papers, and of the 176,224 republican votes, 3,813 were cancelled. The blank papers and the republican votes against the king's return totalled 523,086. Out of 1,861,146 registered electors, 90.9% voted, of whom 69.3% were in favour of the monarchy.

Hungary.—Two elections were held, in May 1939 and in Nov. 1945. On May 28–29, 1939, the government Hungarian Life party gained a large majority with 186 seats (out of 260); the Arrow Cross (tascist) party followed with 29, the Smallholders' party 14, Liberals 5, Social-Democrats 5, Christian Union 3, four dissident fascist parties 11, Independents 7. The issue was democracy versus fascism. The government was guardedly anti-fascist and pro-democracy. The fascists were pro-German and anti-semitic. The

A disabled Englishwoman marking her ballot in Kensington during the general elections of July 1945. The aged and infirm of that district were brought to and from the polls at Queen's Gate Gardens



left parties supported democracy against the fascists and stressed land reform.

On Nov. 4, 1945, the Smallholders' party gained a large majority with 245 seats (out of 409); the Social-Democrats 70, Communists 69, the National-Peasant party 23. These four parties, forming a coalition, were committed to nationalization measures and land reform. The slogan of the Smallholders' party was "liberty, religion and individual rights."

India.—On July 25, 1946, the results of the elections to the constituent assembly were announced. Out of a total of 385 seats, 210 were allotted to general constituencies, of which the Congress party gained 201, ensuring it an absolute majority in the house; among the Congress members elected were 25 representatives of the depressed classes, 7 Christians, 3 Anglo-Indians and 12 women. The Moslem league gained 73 out of the total of 78 seats allotted to Moslems. The four seats reserved to the Sikhs remained unfilled, as the latter boycotted the elections. Finally, 93 seats remained to be filled by the Indian states.

Italy.—The first elections after the overthrow of the fascist regime were held on June 2, 1946. The return of freedom showed itself in a welter of parties. The Christian-Democrats led with 207 seats (out of 556), the Socialists following with 115 and the Communists with 104; the National-Democratic Union (Liberals) gained 41; a new party, Uomo Qualunque, won 30; the Republicans 23, National Freedom Bloc (Monarchists) 16, Action party 7 and other lists 13. The chief issues were monarchy versus republic, and clericalism versus anticlericalism. Land reform and the extent of public control in the economic field were other important issues.

Simultaneously with the general elections to the constituent assembly, a referendum on the "institutional question" was held: 12,717,923 votes were cast for a republic against 10,719,284 for the monarchy; there were 1,498,136 invalid papers.

Netherlands.—Two elections were held, in May 1937 and in May 1946. On May 26, 1937, in the second chamber of the states-general, the Roman Catholic People's party secured 31 seats (out of 100), the Anti-Revolutionary (Conservative) party 17, the Christian Historical (Protestant) Union 8, Liberals 4, Liberal-Democrats 6, Christian-Democrats 23, Communists 3 and National-Socialists 4. The main issue lay between democracy and the political extremism of nazis and communists. Speed of rearmament was another important issue. The Socialists were against the deflationary policy favoured by the government and advocated more borrowing and spending.

On May 17, 1946, the first election since liberation saw the Roman Catholic party still leading with a narrower margin over the Social-Democrats: 32 seats as against 29; the Anti-Revolutionary party had 13 seats, the Communists 10, the Christian Historical Union 8, the Freedom (Liberal) party 6 and the State Reform party 2. The National-Socialists were disbanded; the Liberal-Democrats and the Christian-Democrats fused with the Social-Democrats. The three confessional parties and the nonconfessional parties were broadly aligned against each other. The Roman Catholic People's party supported social reform but was anti-Socialist. The Indonesian policy of the government was opposed by the Anti-Revolutionary party.

New Zealand.—Three elections were held: in Oct. 1938, Sept. 1943 and Nov. 1946.

On Oct. 15, 1938, the Labour party won 53 seats, the National (Conservative Farmers') party 25 and the Independents 2. The issue at the election was private enter-

prise versus the increasing amount of state control.

On Sept. 25, 1943, the Labour party led with 45 seats but had lost relatively to the National party with 34; there was one Independent. All parties were united in support of World War II. The issues were exclusively domestic, chiefly land legislation and internal marketing policy. Conservatives favoured producer control of prices and marketing, instead of government control. There were allegations against extravagance in war administration.

On Nov. 27, 1946, Labour dropped to 43 seats while the National party advanced to 37 seats. This election was again on domestic issues. Both parties were agreed on controls, but the National party favoured lower taxation, a modification of the means test for pensions and a greater measure of marketing control by producers while retaining bulk marketing and guaranteed prices for the export producer. Labour was charged with yielding too readily to trade union pressure.

Norway.—An election to the Storting was held on Oct. 8, 1945. The results were as follows (party strengths in the former Storting elected in 1936 being shown in parentheses): Labour party 76 (70), the Conservative party 25 (36), Liberals 20 (23), Communists 11 (nil), Agrarians 10 (18) and the Christian People's party 8 (2). The issue was private enterprise versus state control. The Agrarians lost ground partly because of their poor record in the resistance movement.

Poland.—An election held to the lower chamber (Sejm) on Nov. 6, 1938, resulted in 67% of the electorate recording their vote despite the opposition's boycott of the elections. The National Unity camp (Oboz Zjednoczenia Narodowego), from which the government drew its support, had 161 of the 208 seats; 19 seats went to the Ukrainians, 5 to the Jews and the remainder to independent candidates. The leaders of the opposition parties -the Socialist, the National Labour (Christian-Democrats), the Populist (Peasants) and the National party-also urged the boycott of the elections of Sept. 8, 1935, in which year only 47% of the electorate polled. In 1935, as in 1938, the boycott was called in protest against the electoral law of July 8, 1935, a complicated elite system which enabled the government to influence the voting. The total electorate, which included all men and women more than 24, numbered approximately 17,400,000. On Nov. 13, 1938, 64 senators, comprising two-thirds of the senate, were chosen by the electoral commissions (consisting of "citizens of meritorious service") whose function it was to elect the senators. The remaining 32 senators were appointed by the president of the republic.

After the liberation, the Russian-sponsored provisional government resisted for almost two years the demand of the British and U.S. governments to carry out the international agreement of Yalta and to hold "free and unfettered elections" as soon as possible. An election was finally fixed for Jan. 19, 1947. In the meantime a referendum took place on June 30, 1946. The Polish electorate had to answer the three questions: (1) Are you for the abolition of the senate? (2) Are you for making permanent the economic system instituted by land reform and nationalization of basic industries? (3) Are you for the Oder-Neisse frontier? The Polish Peasant party, the only party so far allowed to fight openly for true democracy, decided to vote "no" to the first question in order to count all the electors opposed to a regime controlled by the Communist party. According to Stanislaw Mikolajczyk, leader of the Peasant party, 83.5% of the electorate voted "no" to the first question. The regime, however, published after a delay of 12 days completely different results, according to which the answers to the first question were 7,844,522 "yes" and 3,686,029 (32%) "no."

Rumania.—Elections were held in Dec. 1937, June 1939 and Nov. 1946.

On Dec. 20, 1937, the National-Liberal (Conservative) party, the government cartel, obtained 152 seats; the National-Peasant party (which had an electoral pact with the fascist Iron Guard of C. Z. Codreanu) 86; the Iron Guard 66, the National-Christian league 39 and the dissident Liberals 16. The Hungarian Peasant party secured 19 seats and the Radical Peasant party 9. The chief issue was the unpopularity aroused by the National-Liberals after four years in power and the increasing strength of the fascist movement.

On Feb. 27, 1938, all political parties were abolished by a new authoritarian constitution promulgated by King Carol II. On June 1 and 2, 1939, elections were held to a corporative assembly of 258 members in which three social classes—(1) intellectual professions, commerce and industry, (2) agriculturalists and (3) labour—were each equally represented.

On Nov. 19, 1946, the Communist-sponsored Democratic Front won 348 seats; the National-Peasant (chief opposition) party obtained 32, the National-Liberal party 3, the Popular Hungarian Union 29 and the Democratic Peasant party 2 seats. The government seats were made up of 73 Communists, 75 dissident Liberals, 75 Social-Democrats, 70 Ploughmen's Front, 26 National-Popular party, 20 dissident National-Peasants, etc. According to the official figures (contested by the opposition) the government parties obtained 84% of the votes. Notes were sent by the British and U.S. governments protesting the conduct of these "elections."

Sweden.—Elections were held in Sept. 1940 and Sept. 1944. On Sept. 15, 1940, the Social-Democrats led with 134 seats, the Conservatives secured 42, the Agrarians 28, the People's party 23 and the Communists 3. At this election, a "gentlemen's agreement" was made between the parties represented in the National Union government (formed during the war crisis) to avoid violent campaigning. The election results were an endorsement of the Social-Democrats' policy of neutrality and independence. Their critics wanted more help given to Norway and Finland.

On Sept. 15, 1944, the Social Democrats still held the lead with 115 seats, the Conservatives secured 39, the Agrarians 35, the People's party 26 and the Communists 15 seats, a large increase. The election was dominated by domestic issues, in particular economic reconversion policy after the war. The Communist party attacked the government's wage policy and its past policy toward Germany.

Switzerland.—Elections were held in Oct. 1939 and Oct. 1943. On Oct. 29, 1939, out of a total of 187 seats, the Radical-Democrats secured 50, Social-Democrats 45; Catholic Conservatives 44, Agrarians 21, Liberals 6, Independents 9, other parties 12. Candidates were chosen by mutual agreement of the parties. There was no voting except in isolated cases.

On Oct. 31, 1943, the Social-Democrats made a bid for more power and obtained (out of a total of 194 seats) 54 seats; the Radical-Democrats held 47, Catholic Conservatives 43, Agrarians 22, Liberals 8, Democrats 6, other parties 14. The Socialists claimed improved social legislation and a more liberal foreign policy.

Turkey.—Elections were held in March 1939, Feb. 1943 and July 1946. On March 26, 1939, the Republican Peo-

ple's (government) party won 399 seats out of a total of 424 members of *Kamutay* (or grand national assembly); the independent group of the People's party, a group of "benevolent critics" of the government formed from among the ranks of the government party itself, won 21 seats. There were four representatives of national minorities.

On Feb. 28, 1943, the Republican People's party won 416 seats; the independent group of the People's party 1aised their number of seats to 35.

On July 21, 1946, the election for the first time took place on a basis of universal suffrage and genuine party warfare. The government party obtained 395 seats, the Democratic party (formerly independent group of the government party) 62 and the Independents 7. The main contest was between the government party led by Recep Peker and the Democratic party led by Celal Bayar. These two parties agreed on their attitude to Russia but disagreed on internal policy.

These were the first reasonably democratic elections to be held, although the Democratic party complained of violence and terrorism being used against it.

Union of South Africa.-Elections were held in May 1938 and July 1943. On May 18, 1938, the United party of South Africa (led by Gen. J. C. Smuts and Gen. J. B. M. Hertzog) won 111 seats, the Nationalist party (D. F. Malan) 27, the Dominion party (Col. C. F. Stallard) 8, the Labour party 3 and the Socialist party 1 seat. The parties were sharply divided. The Malanites were anti-British, anti-Jewish, anti-Asiatic and anti-native in their policy. They supported republicanism. On the domestic side they wanted gold mining more heavily taxed and more help for the white farmers. In the foreign field they demanded a neutrality declaration in the event of war. The United party opposed the Nationalists' policy on the grounds that it would lead to civil war. The United party stood for South African interests but opposed violent nationalism. It was pro-British in maintaining a policy of support for Great Britain in case of war.

The Dominion party appealed exclusively to the British element in South Africa. It stood for a more liberal native policy.

In the election on July 7, 1943, the United party had made a truce with the Labour and Dominion parties, while some of the followers of Gen. Hertzog and the followers of Dr. Malan had joined to form the Reunited Nationalists. The issue was for or against South African support for World War II, with neutrality as the alternative. The Nationalists raised the communist bogie. The United party won 89 seats, the Reunited Nationalists 43, Labour 9. The Dominion party won 7 seats, its program calling for whole-hearted support for Great Britain.

Yugoslavia.—Elections were held in Dec. 1938 and Nov. 1945. On Dec. 11, 1938, the government party led by Dr. Milan Stoyadinovitch (Yugoslav Radical Union) won 306 seats and the united opposition led by Dr. Vladimir Matchek 67. In this election to the Shupshtina (chamber of deputies) the opposition made progress against the government's dictatorship. In general, the Serbs supported the government and the Croats the opposition. The Yugoslav Nationalists joined the opposition. Serbo-Croat negotiations for a federal state were an election issue.

On Nov. 11, 1945, in the first postwar elections the Communist-sponsored National Front returned 575 representatives. One representative was chosen for every 50,000 electors.

The opposition refused to take part in the election;

according to the government, only 10% of the votes were cast against the National Front.

(For elections in South American and other countries, see articles on those countries.) (J. G. Fo.)

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Electrical Industries

From 121,837,000,000 kw.hr. in 1937, production of electricity for public supply in the United States almost doubled to 230,649,000,000 kw.hr. in 1944. Of this increase in annual production, about two-fifths occurred in the years before U.S. entry into World War II. There had been a decrease to 116,681,000,000 kw.hr. in 1938. Thus, in round billions of kw.hr., in the 3 years preceding the attack on Pearl Harbor, there was an increase in annual electricity output of 51, while in the 3 war years to 1945 the increase was 62.

These figures show that the rise to the high of 1914 was not so rapid as might be supposed, that the increases of the war years were actually only an acceleration of a trend already established during the defense period between Hitler's move into Poland in 1939 and the Pearl Harbor attack in 1941.

During the months of war in 1945, weekly outputs of electricity remained consistently above those of the same weeks of 1944, indicating that the record high of the earlier year would have been exceeded had the war continued. In the last 5 months of 1945, output dropped precipitately and remained down until the summer of 1946, when it began to climb, reaching 4,521,000,000 kw.hr. for the week ending Sept. 14, a figure significantly higher than the 4,395,000,000 kw.hr. for the corresponding week of the record war year of 1944. This remarkable recovery from the natural postwar letdown and the disturbing series of labour difficulties following it, indicated the resilience of the national economy.

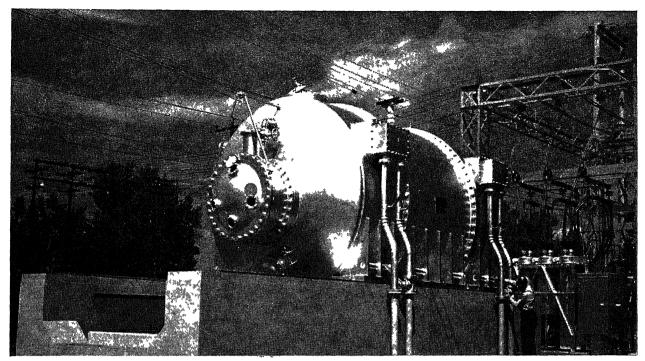
In the years of the decade 1937–46, production of electricity from water power ranged between 30% and 40% of the total, reaching its highest proportion in 1938, the year of lowest production in the decade, and dropping to its lowest proportion in 1944, the year of highest production. This circumstance pointed up the comparative inflexibility of water as against fuel power in ability to respond to energy demands.

Basically, energy from water power is determined by the weather and is outside of human control, while energy from fuel is a matter of human effort in extracting fuel from the earth.

Production of electricity in government-owned plants, federal, municipal and power district, and in those of co-operatives, increased rapidly during the ten years. In 1937 the proportion was 7% and in 1945 was 19%. The greater part of the increase occurred in the second half of the decade, when the demand of war for metals, particularly for aluminum, was largely met by energy from federal hydroelectric projects.

The biggest jumps occurred in 1942 and 1943, each about 3%.

The decade was marked by three advances in electricity production. One, the least spectacular of the three but easily the most important, was the continuing increase in steam pressures and temperatures, notably exemplified in the 2,500 lb. 940° F. installation at the Twin



Synchronous condenser cooled by hydrogen, installed in 1941 at Denver, Colo.

Branch plant of the Indiana-Michigan Electric company in 1941, and the 1,500 lb. 1,050° F. unit ordered in 1946 for the Sewaren plant of the Public Service Electric and Gas company.

Second of the developments was the gas turbine, which was brought well inside the range of practicability by advances just before and during the war years. The gas turbine avoided the necessity for boilers and for steam and water piping, because it applied the heat of combustion directly to turbine rotation; but it required air compression equipment that made large demands on the energy output of the machine. Developments to the end of the decade indicated that the gas turbine would have a more immediate field in traction and ship propulsion applications than in stationary installation for electricity production.

Third was atomic power, on which more nonsense was fed to the public than on any other technical development in history. It was probably safe to say, in the light of knowledge at the decade's end, that every popular idea on power production from atomic fission, in terms of ordinary utilization of energy, was wrong. There was no ground for believing that steam and gas turbines, water wheels and internal combustion engines would be superseded by atomic energy machines in the immediate future, nor very soon after that, either. One authoritative guess was that it would take from 10 to 30 years. The problems of unit and plant design and of economy were tremendous, and their solutions would come only from time-consuming calculation, experiment and trial. Pre liminary and entirely theoretical explorations into the potentialities of atomic fission for power production indi cated that coal would have to double in price, at least, before atomic energy would approach a competitive position as against the steam turbine. A report prepared under the direction of Charles A. Thomas, Monsanto Chemical company, published in Sept. 1946, stated a necessary investment at postwar costs of \$334 per kw. of capacity for an atomic energy plant as against \$133 per

kw. for a steam plant; also that equality of operating costs between the two kinds of plants would not be reached until the price of coal rose to \$10 per ton.

Capacity.—Although new generating capacity of approximately 18,000,000 kw. was installed by U.S. electric utilities in the period 1937-46, total capacity increased only from 37,134,382 to about 51,000,000 kw. The difference between new capacity installed and increase in total capacity, some 4,000,000 kw., was accounted for by retirement of old machines. During the 5 prewar years 1937-41, the proportion of new replacing retired capacity was about 22%. But in the 3 war years, 1942-44, the proportion was only 15%. These two ratios showed how machines were kept in service beyond retirement age in order to help carry the war load. This point appeared even more strikingly in the fact that in 1945, although new capacity of 888,400 kw. was installed, the total capacity shrank from 50,275,377 to 50,102,442 kw. In that year of the war's end, retirements amounted to more than new capacity installed.

U.S. hydroelectric generating capacity had a large increase in the ten-year period, but the coincident increase in fuel power generating capacity was in proportion. The result was that at the end of the period the respective proportions of the 2 ways of production in the total, 30% hydro, 70% fuel power, were the same as in 1937.

In 1937, about 11% of the total generating capacity was government-owned. In 1946, the proportion had risen to more than 20%. Practically all of the increase was accounted for by federal water power projects.

A significant addition to effective electricity production capacity, estimated as high as 1,000,000 kw., was made during the war years by an acceleration of transmission line interconnections between plants and systems. Such interconnections were old in the history of the industry, but before the war they had been made primarily for reasons of operating and investment economy. But the war reversed these considerations, and it was quickly realized that the building of some miles of transmission line could readily avoid the fabrication and installation of electricity production equipment, thus freeing manufac-

turing facilities for the more urgent production of war goods.

During the period 1937-46, U.S. electric utilities saw two predictions concerning them go entirely wrong One, before the war and in its first years, was that it would not have sufficient capacity to meet demands. This prediction was made first in 1935 by the Federal Power commission. The statement then was that recovery from the depression would find the nation short by more than 2,000,000 kw. in generating capacity. The commission continued to predict shortages that never came up to July 1941, when it officially recommended installation of 13,-540,000 kw. as needed in the years 1943-46 inclusive. Capacity actually scheduled by the Office of War Utilities in those years was 6,203,000 kw., a sufficient addition to meet war demands. The difference of more than 7,000,000 kw., had it been installed, would have interfered seriously with the war effort.

In 1942, the chairman of the Federal Power commission, in a confidential report to the president, said that the Office of War Utilities had underestimated the war load by 10,000,000 kw. and overestimated the capacity available to meet that load by 1,500,000 kw. The OWU apparently convinced the president that its appraisal of the situation was correct, for from then on it had no interference from the FPC in its wartime control of electricity supply. Thus was the prediction of insufficient capacity proved wrong.

The other prediction, made as the war neared its end, • was a generally expressed feeling that there would be a great surplus of generating capacity in the postwar period. This, also, turned out to be wrong. Although there was a decrease in industrial requirements of electricity, there were increases in sales to other classes of customers. The increases were not sufficient to balance the decreases, but the net result was that the reduction was not nearly so great as had been anticipated. Also, as is mentioned elsewhere in this review, a significant proportion of the war load was carried on equipment which was beyond retirement age and was discarded as soon as the emergency had passed. Thus the electric utilities started in the postwar time with no more, perhaps a little less, than was required by the immediately foreseeable demands on them. It was possible, indeed, that the capacity shortage predicted for the prewar and war periods might occur in the postwar time. Strikes, shortages, general economic and political confusion, largely prevented the installation of new capacity in 1946, and in that year aggregate peak loads on electric systems were higher than during the war period.

Production Economy.—The greatest production of energy per unit of power capacity in the history of U.S. electric service was achieved in 1944—4,634 kw.hr. per kw., almost a 50% rise from 1937. But the steepest part of this rise occurred in the war years, although the rise was well started in 1941. The increase in unit production was largely the result of multiple shift operations in industry, keeping generation capacity at work for longer hours, but a significant contribution to the increase was made by loading machines more heavily and by narrowing the margin of capacity held in reserve for maintenance and for emergency.

How that margin was encroached upon appears from comparison of the 1937 and 1944 figures of peak loads and rated capacities. In the former year, the peak load was 25,350,000 kw. and the capacity was 37,134,000 kw.

The margin of reserve was then 11,784,000 kw., about 32%. In 1944, the peak load was 41,500,000 kw. and the total capacity 50,275,000 kw., a margin of 8,775,000 kw., or 17.4%. It should be remembered that these were national figures and that the margin ratios shown represented the average condition; in many particular cases machines carried what would have been considered in previous years to be dangerous overloads and were worked without shutdown for inspection and maintenance for periods excessively uncomfortable for their operators.

A significant betterment of thermal economy in electricity production was accomplished in the ten-year period. Pounds of coal per kw.hr. decreased from 1.42 in 1937 to 1.29 in 1944. But this improvement in thermal economy was more than cancelled out by the coincident increase in the cost of fuel. The average cost of fuel per ton rose from \$3.26 in 1937 to \$4.50 in 1945. The result was that the cost of fuel per unit of energy produced increased from 2.3 mills to 2.9 mills. Figures of 1946 fuel cost were considerably higher because of the national coal strike in that year.

Sales of Electricity.—Greatest amount of electrical energy sold any year of the decade, greatest also in the history of the industry, was in 1944, the peak year of war production. But, strangely enough, in that year of intense industrial activity, the 198,060,611,000 kw.hr. sold was divided between commercial and industrial customers on the one hand and all other users on the other in practically the same ratio as obtained in the division of about hall that amount, 99,358,791,000 kw.hr., sold in 1937. It is true that large industrial customers used a greater proportion of the total energy sold in 1944 than in 1937, but the increase—from 51 to 57%—was small in comparison with the difference in industrial activity between the 2 years.

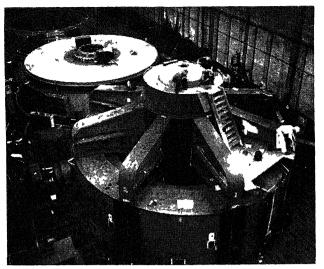
Explanation of the condition lay in the fact that despite restrictions, blackouts, brownouts, unavailability of new appliances and urgings to economize in every way, the U.S. people continued, in their homes particularly, to increase their use of electricity. As a matter of fact, the increase in energy sold to residential customers in 1944 was greater than in any preceding year since 1936.

This increase was not caused in major degree by a rise in number of residential customers. It resulted almost entirely from greater use of electricity in the home, as was shown by the figures of annual kw.hr. per customer. In 1937, the average residential customer used 805 kw.hr. By increases from year to year ranging from 34 to 55 kw.hr., residential energy usage had risen to 1,070 kw.hr. in 1943. Then in 1944 the increase was 81, to 1,151 kw.hr. in that year. Continuing to rise at about the same rate in 1945, the figure became 1,229; it rose further to 1,329 in 1946.

From 27,262,319 customers in 1937 to more than 35,000,000 in 1946 was the 10-year record of the electric utilities. More than 95% of the increase was in residential (including farm) customers. These customers increased in number during the war years. But the war period did more than merely slow up the increase in commercial and industrial customers; it reduced their number. In the two years of the war in Europe before 1942, business activity in the United States spurted forward with the result that utility customers in the commercial and industrial class reached a high of 4,472,653. When the United States entered the war, and priorities and other restrictions

A giant transformer nearing completion in 1941 was representative of the widely increased use of electric power and machinery in the United States during World War II





Grand Coulee dam waterwheel generator (108,000 kw.) shown in the foreground under construction at East Pittsburgh, Pa. In the background is a 40,000 kilowatt generator for Pickwick Landing dam in Tennessee

were imposed on business, there was a rapid mortality among this class of customers, their number falling to a low of 4,314,838 in 1943. As the end of the war approached, the number began again to increase more and more rapidly through 1945 and 1946, to reach an estimated 4,620,000 at the end of the latter year.

Revenue and Expenses.—As against \$2,160,797,500 in 1937, electric utility revenue was \$3,341,518,400 in 1945, an increase of about 55% in 9 years. Considering that the increase in sale of energy was nearly 100% in the same period, which was a time of generally rising costs, the ratio of revenue increase was modest. In only 1 year of the 10 was there a decrease in revenue; that was in 1938 and the decrease was only about 0.2%.

Although more electricity was sold in 1944 than in 1945, revenue was higher in the latter year. In 1944, the average revenue per kw.hr. was 1.65 cents; in 1945, 1.73 cents. The rise was explained by a reduction in 1945 of energy usage by industrial customers, who paid a lower rate. The loss in the one class of business was more than recovered by the gain in others. The period was one of numerous reductions in rates for all classes of customers. Combined with the reductions accomplished by increased usage of energy paid for on the lower steps of rates, their effects were seen in the continuously declining revenue per kw.hr. from residential customers. In 1937, this revenue was 4.3 cents; in 1945, 3.41 cents, a decrease of 0.89 cents or about 20%. For all classes of customers, the decrease in the 9 years was about the same in ratio, from 2.17 cents to 1.73 cents.

With the averages of the 5-year period 1935–39 as index bases, the cost of electricity to the residential customer showed a 1937–45 decline from 97.2 to 77.2, while the cost of living rose from 102.7 to 128.5.

In general, all except one of the expenses of U.S. business during the decade were more or less within the control of management, responsive in their different ways to improvements in equipment and in operating methods. The exception was taxes. This condition appeared clearly in the record of the U.S. electric utility industry, in the year-to-year figures of operating ratio, the share of revenue demanded by operating expenses.

From 38.5% in 1937, the electric utility operating ratio rose to 41.3% in 1945. The ratio was below the 1937

figure in 1938, 1939, 1940 and 1941, then it began to go up. Considering the rise of cost levels generally in the war years, the increase of 2.8% from 38.5 to 41.3 in operating ratio was not excessive and it reflected favourably on the competence of management.

But the picture was far different when taxes were included as an operating expense as, logically, they should be, because they were largely based on income. In 1937, the operating ratio including taxes of the electric utility industry was 53.8%. It rose 10.4% to 64.2 in 1945.

Labour.—On the index basis of 1939, employment in electric utilities was 103.8 in 1937, rising to 104.2 in 1941 and dropping to 84.2 in 1945. Corresponding indexes for man-hours worked were 105.6, 104.7 and 92.5, and for pay rolls, 100.2, 110.8 and 122.1. Reflecting the conditions of war was the rise in unit production per employee from an index of 91.1 in 1937 to 208 in 1944. Unit labour cost was highest in 1938, index 110.1, and lowest in 1943, index 65.9.

Comparison of the man-hour and pay roll indexes in 1937 and 1945 showed an increase in average pay rates of 30 to 40% in the 9 years. In Feb. 1946 the average utility worker took home \$50.63 per week as against \$40.60 for the average wage earner in the manufacturing industries.

Although it was not until after the war that strikes of electric utility employees became a matter of public concern, the history of the industry was by no means free of such phenomena. In the 9 years 1937–45, there were 63 strikes, 43 of them in the war years. But most of these strikes were of comparatively small groups of workers and did not cause widespread interruptions of service. A few did have or threatened such effect but they were settled fairly quickly. It was not until Duquesne Light company, Pittsburgh, Pa., employees went on strike in Sept. 1946, that any large metropolitan centre really felt the disruption of living and business resulting from the severely curtailed electric service caused by a large-scale strike. The walkout lasted 27 days; business loss to the community was estimated at \$300,000,000.

Construction.—More than \$5,000,000,000 was expended by the U.S. electric utilities for construction of plant and system facilities in the 10-year period 1937-46, exclusive of money spent on power by the federal government. Of this \$5,000,000,000,000, more than half was expended on the distribution system—the lines running along the streets and alleys of cities and towns and along country roads. Power houses took only about one-third of the total expended.

Construction slowed up greatly during the war years of 1943 and 1944 because materials were not available and capacity of electrical equipment manufacturers was largely turned to war production. In 1945, building was resumed with the end of the war, and for 1946 the electric utilities projected their largest construction budget since 1930. This program was not fulfilled, however, because of postwar strikes and shortages.

Financing.—Taking advantage of lowered rates of interest, practically every industry refunded long-term debts, none more diligently than the electric utilities. Of more than \$7,500,000,000 in utility financing in the years 1937–46, less than 8% represented new money coming into the business.

This was a remarkable situation. The industry in 10 years had doubled its output, increased its production capacity by about one-third, expended more than \$5,000,000,000 or construction and had assets of \$18,000,000,000 or more; but had taken in only about \$600,000,000 of new capital during the decade. Refunding debt at lower in-

terest made available much money for construction; depreciation reserves and accumulated surpluses added to funds available. But it was difficult to see how these resources could be sufficient for future expansion of the industry.

Farm Service.—The number of U.S. farms with electric service multiplied nearly three times during the decade, from 1,215,400 to an estimated 3,600,000. Of the total in 1946 about one-third were served by Rural Electrification administration (REA) co-operatives; the remainder, except for around 200,000 connected to lines of municipal and other public agency systems, were served by power companies. On the basis of these figures, around 60% of U.S. farms had electric service connection.

However, because of vague definition of what constitutes a farm, it was extremely difficult to adduce figures of farm electrification that would stand without question of one kind or another. Some farms had no dwellings on them, some had two or three or more; some rural dwellers were part-time farmers only and some people lived on farms and did not work them. Probably a fairer picture was obtained by considering rural dwellings rather than number of farms.

In communities of less than 2,500 population and including rural homes, farm and non-farm, there were, as of the end of 1945, 13,625,000 occupied dwellings. Of these, 9,400,000 had electric service, 8,050,000 from power company lines and 1,350,000 from co-operative systems. Within reach of electric lines, but not connected, were 1,600,000 dwellings, leaving 2,626,000 that did not desire service or could not get it. Thus it could be said that more than 80% of the rural population of the United States had electric service or could get it by signing an application.

Started by act of congress in 1935, the Rural Electrification administration had allocated some \$14,000,000 to 11 co-operative borrowers by June 30, 1936. Ten years later the accumulated total of loans to 856 borrowers was \$817,086,990; 474,837 mi. of line had been built, to which were connected 1,549,057 customers who paid \$80,275,086 for 2,185,149,697 kw.hr. in the fiscal year ending June 30.

Largest appropriation to the REA in any one year was \$300,000,000 in 1946, which brought the total of appropriations from the start of the administration to \$825,628,288. The funds allocated were expected to bring the totals of customers up to 2,088,127 and the mileage of line up to 674,742.

Expansion of REA systems was restricted during the war years by the channelling of materials and labour into the U.S. war effort. In the immediate postwar period, expansion was still heavily handicapped by shortages. REA co-operatives needed materials and equipment not only for the building of new lines, but also for the reinforcement and rebuilding of existing lines that had proved to be of too light design to carry the loads piled up on them. This condition was stated by Claude R. Wickard, REA administrator, in a speech to the Illinois Association of Electrical Co-operatives, Aug. 5, 1946: "Operating reports of REA borrowers reaching us in Washington indicate that 432 of 835 REA financed systems even now are not able to supply all the power needed by their present consumers."

Government Power.—Although generating capacity in U.S. government plants increased more than 6,000,000 kw. from 1937 to 1945, it was more than questionable that this increase was a manifestation of the will of the people. About three-quarters of it was in plants owned by the federal government and was not voted on by the

people themselves. The 1937–45 record showed that when the question was put to vote in municipal ownership and franchise elections, the people were much more against than in favour of government in the power business. Of 713 elections in the record, only 274 or 38.4% went against the power companies. Weighting the results of these 713 elections on the basis of populations concerned resulted in a ratio of less than 12% in favour of government ownership.

New Developments.-Most important development of the decade was the fluorescent lamp. First announced officially in April 1938, the new light source was foreseen primarily as a means of decoration. But it was not long before the tube was brought to practicality for vision, with an efficiency about double that of the incandescent lamp. The efficiency was accepted by the public as a means for "cutting the electric light bill," and many thousands of the new lamps were sold on that basis. The buying pressure thus created forced the lamp into the market before its characteristics were fully known and before its own development as well as the development of necessary auxiliary devices was completed. Thus the lamp was extensively misapplied, which might have caused a serious setback had it not been for the war when, like so many other things, the fluorescent lamp became unavailable to the general buyer.

During the war period much more was learned about the lamp, and it was greatly improved. When the war ended it was possible to market the lamp in much more orderly fashion and to apply it intelligently with proper realization of its shortcomings as well as its advantages. The principal thing learned about the fluorescent tube was that it could not be treated as a simple replacement of the familiar incandescent bulb, that as an entirely new and different kind of light source it required new and different techniques of application.

By 1946, when its dollar value in lamp manufacturers' shipments had reached about 17% of total production, the place of the fluorescent tube in the lighting art was pretty well established. Its most extensive application was still in commercial and industrial places, and its use in the home was still very small.

The decade saw an extremely large development in plastics of all kinds, caused principally by shortage of rubber during the war years 1939–45. As rubber substitutes, plastics became very important for electrical insulation on wires and cables. In some instances, as for building wire, the plastic substitutes showed important advantages over rubber in that a thinner layer of insulation could be applied to the conductor and the overall diameter of the wire thus reduced, allowing a larger number of wires to be put into a given space.

Outstanding among new plastics in electrical applications were the "silicones" which remain chemically and physically stable in low or high temperatures in which rubber or any other organic insulation in effect freezes or burns up. This characteristic of the silicones made possible the design of electrical equipment for much higher operating temperatures and consequently smaller for given energy-handling capacities.

Among electrical applications, several important advances were made, not of entirely new things like the fluorescent lamp, but accelerations of developments already in motion.

Of great importance in war production were three forms of electric heating—induction, infra-red and welding.

Any metal object brought into an alternating electromagnetic field has induced in it a secondary current whose effect is to heat it. As the frequency of alternation of the field increases, the secondary current tends to crowd nearer to the surface of the object and with it the resultant heat. Thus by using a field of proper frequency it became possible to heat the object to a desired depth from the surface. With fields of 10,000 cycles up to several hundred megacycles available from modern equipment and with proper quenching facilities, any desired characteristic of case hardening could be given to steel shafts, cams, gear teeth or other wearing surfaces. Also induction could be used for heating, for forming and forging, for brazing and for shrink fitting. A host of ingenious applications of induction heating were developed in the stress of war production, many of them much more economical of time, labour and money than previously used methods.

Infra-red heating utilizes the invisible radiant energy given off by any heated object. If the object is a filament enclosed in a glass envelope and heated by an electric current, it is an infra-red lamp. The only difference between it and an incandescent lamp is that the filament is not operated at as high a temperature, and it gives off less light. The radiant heat energy from an infra-red lamp can be directed by reflection just like light. This kind of heating became used extensively in industry for baking and curing enamel and other surface finishes and for drying.

The principal improvements of the decade in this method of heating were in reflecting surfaces, in design of lamps to handle greater heat concentrations and in arrangement of ovens and tunnels to conserve heat input.

Had it not been for advances in electric welding techniques, the flow of guns, tanks and ships from the "arsenal of democracy" would have been much slower and thinner. Most significant were developments in automatic welding, including methods of control which turned electricity on and off like water from a faucet, putting into each welding operation the precise amount of energy required for it, enough heat to make the weld but not enough to burn the metal. Particularly spectacular in both appearance and performance were automatic arc welders moving serenely along the butted edges of steel plates and joining them together in a bond stronger than the parent metal.

Not so significant in the war effort, but holding great possibilities in peacetime industry, was another electric heating development of the decade. This was dielectric heating, similar to induction heating in that it uses high frequency energy, but different in that it heats nonmetallic materials. Between two objects of different electric potentials there exists a condition of stress, called the electrostatic field. The stress in this field changes as the potentials of the two terminal objects change. Any nonconducting object between the two is subject to the changing stress, and its molecules strive to adjust themselves to it. If the changes are extremely rapid, heat is generated in the object by friction between the distracted molecules. Thus the object is heated from the inside out instead of from the outside in, as in induction heating. This phenomenon became extensively used in the preheating of materials for plastics before polymerization under pressure and heat into finished form. Also it was widely applied, and showed great promise of much wider use, in the processing of inorganic materials, as in food preparation.

A dream of the future was a house without a chimney.

The decade saw some progress towards that dream in the application of electricity to home heating. On the strict basis of cost, and using any known means of converting electricity into heat, electric heating for homes still could not be justified in competition with combustion. Nevertheless, there was a considerable amount of experimentation and trial of electric home heating, particularly in areas where government production of electricity had led to exceptionally low rates as in the regions supplied with energy by the Tennessee Valley authority and by the Bonneville Power administration. At the end of the decade, this experimentation had not yet proved that even by government subsidization of power could electric house heating be considered practical over the nation.

However, when electricity was considered not as the source of heat, but as a means by which heat could be brought into the home, the picture changed. It was possible to use electricity to pump heat into the house from outside, from the air, from the ground, from water. The heat pump, long known and long applied in mechanical refrigeration, became in the last years of the decade the object of serious consideration as a means for home heating. Several machines of this kind came on the market, and a program of co-ordinated development of the idea was laid before the utility industry.

Manufacturing.—In the 10-year period, production of the electrical machinery industry, based on 1925 production as 100, rose from a low of 97 in 1938 to 553 in 1944. These figures were to be compared with the federal reserve board indexes calculated on the same base of 77 for 1938 and 263 for 1943. Although during the war years many nonelectrical products were turned out by electrical manufacturers, and the index of their production was somewhat increased thereby, the comparative figures indicated the immense amount of electrical goods required for the war effort.

Revealing the effects of war on normal production of electrical goods were the indexes of shipments by categories made by manufacturers. Still on the 1925 base, refrigerators had risen to 1800 in 1941 and appliances, except refrigerators, to 212 in the same year. Then, in 1942, manufacturing in these categories was discontinued, and the indexes of their shipments dropped respectively to 16 and 25 in 1944.

Meanwhile, shipment of other electrical goods rose from

Public Supply of Electricity in the United States

Ye	ar				Billions of Kw.hr.	Millions of Kw.	Billions of Kw.hr.	Customers Millions	Revenue Millions of Dollars
1937					121.8	37.1	99.4	27.3	2,161
1938					116.7	39.0	93.7	28.1	2,157
1939				٠	130.3	40.3	105.8	29.1	2,290
1940	٠		٠		145.0	41.6	118.6	30.2	2,440
1941					168.2	44.1	140.1	31.6	2,665
1942	٠			٠	189.2	46.4	159.4	32.2	2,856
1943					221.0	49.3	185.9	32.4	3,078
1944					230.7	50.3	198.2	33.0	3,277
1945					222.4	50.1	193.6	34.0	3.342
1946*					223.4	50.2	191.0	36.1	3,450
*F-41-	- 4 -	_							0,400

Sales by Manufacturers of Electrical Goods Index Numbers Based on 1925 Sales—100

Year	Appliances	Refrigera- tors	Electrical Materials		ansmission and Distri- bution equip- ment	Insulat- ed Wire and Cable
1937	136	1.360	131	161	124	98
1938	109	769	83	97	90	60
1939	128	1.100	116	127	104	71
1940	151	1.331	149	1 <i>77</i>	124	87
1941	212	1,800	253	317	189	157
1942	73	264	318	465	213	155
1943	12	158	447	638	167	135
1944 .*	16	25	453	633	141	121
1945	62	170	343	455	138	100
1946*	246	1,363	233	265	144	115
*Estimated					144	

lows in 1938 to highs in the war years; electrical material, from 83 to 453 in 1944; industrial apparatus, from 97 to 638 in 1943; transmission and distribution equipment from 90 to 213 in 1942; insulated wire and cable, from 60 to 157 in 1941. These indexes revealed the adaptation of electrical manufacturing to war conditions. First came the discontinuance of production of consumer goods, next the accelerated production of apparatus and materials for the strengthening of the sinews of electricity supply, then the settling down to an outpouring of munitions of war.

War Record.—The electric utilities competently performed their task of supplying energy for the U.S. war effort while at the same time maintaining the accepted high quality of service to the civilian population.

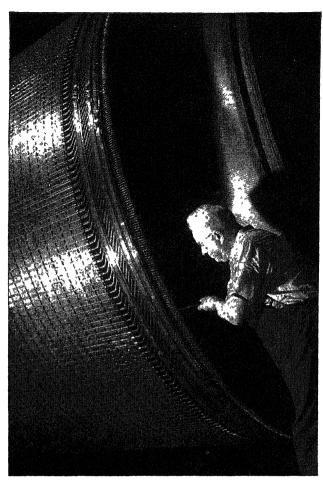
The Utilities Wartime Aid program, started early in 1942, was an informal organization of about 600 electric utilities, both privately and government owned. These utilities, serving the thousands of military establishments in the home country, made available to the army and navy their resources of experience, materials, equipment and skilled manpower. This relieved the military of the necessity of maintaining emergency crews and stocks of materials and equipment which would otherwise have been necessary to keep electrical systems in military establishments in continuous operation.

At no time during the war period was the use of electricity restricted or reduced because of lack of capacity to carry the load. In Sept. 1943, the government asked the utilities to bring to the attention of their customers the need for conserving manpower, fuel and materials for the war effort and to advise the elimination of display and advertising lighting of all kinds and otherwise to economize in the use of electricity. The utilities carried this message to their customers by advertising and personal contact, and soon streets, shop windows, signs and store interiors were partially or completely darkened. This voluntary restriction was made mandatory by government order in Feb. 1945, when fuel became even scarcer than before. This brownout of lighting actually saved only a very small amount of fuel; its primary purpose was to impress on the public the seriousness of the war situation.

In the first years of the war, steel for civilian uses was in short supply and wood was largely substituted for it in necessary transmission line and line terminal construction. This condition was reversed as the war entered its second phase; wood became short, and the utilities were forced again to revise construction practice. Many substitutions of materials were necessary. Retired equipment was restored to service; remarkable shifts and expedients were often employed to keep an outworn piece of apparatus or machine in service. Stocks of parts and materials were pooled so that one utility could obtain from another, often a long distance away, a needed coil of wire or an item of line hardware.

The net result of this co-operation was well expressed in the words of Rear Adm. W. R. Monroe, of the U.S. navy, "When we called for power, we got power and not—thank God!—alibis." (See also Public Utilities; Rural Electrification; Tennessee Valley Authority; Water Power.)

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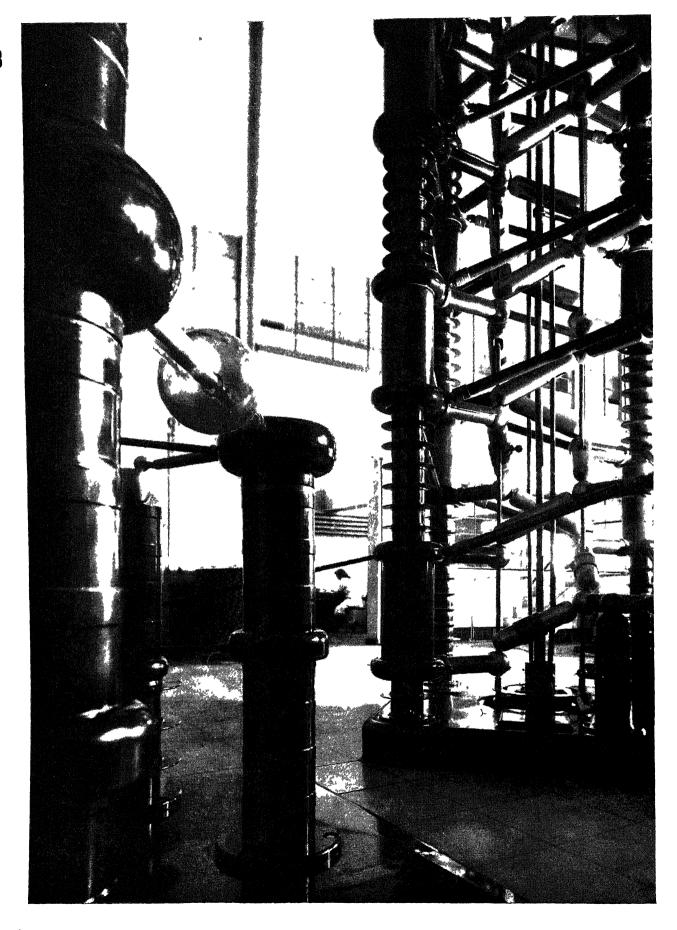
Copper and steel rotor, weighing 100 tons, for a 7,000 h.p. motor built in 1943 for a war plant. It contained more than 50,000 ft. of wire

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Great Britain and Europe

The production of electricity in Great Britain doubled every seven years from 1913 onward. In 1941 it was 16 times what it was in 1914, and its expansion was encouraged by the needs of World War II. New scientific discoveries led to new applications of electric power, new forms of apparatus and new materials. Particularly striking was the development of electronics, especially radar for navigational use. Two developments likely to have an important bearing on the future were the expansion of research activities and the increased attention paid to training of personnel.

Electrical Supply.—The changes in generation and transmission were mainly concerned with increasing the volume of power supply to meet demands and improving the thermal efficiency of generation and reliability of supply. It was estimated in 1946 that, apart from power for industrial purposes, 65% of the 12,000,000 homes in Great Britain had an electricity supply, and the total number of electricity consumers of all types was about 11,000,000. By



Jan. 1945, the total capacity of the generating plant for public supply was approximately 12,000,000 kw. Plans for the reorganization of electricity distribution in Great Britain were formulated just before World War II but were suspended in wartime and would be modified should the proposal of the Labour government to nationalize the industry be carried into effect. Under the national grid scheme, the supply frequency was standardized at 50 cycles per second and thus facilitated widespread interconnection of large areas of load. A further important step was the adoption of a national standard consumers' voltage of 240. In 1943, the North of Scotland Hydro-Electric board was set up for the purpose of developing a number of hydroelectric schemes throughout the highlands of Scotland. The national grid scheme, linking all large electrical power stations throughout the country, proved much less vulnerable to aerial attack than was predicted and was of major importance during World War II. Power was made readily available at dispersed sites for new wartime factories, and the effect on supply of bomb damage to plants was minimized by the availability of alternative supplies through the network interconnection afforded by the grid.

Electrical Manufacture.—Wartime demands for munitions of all kinds brought about a great increase in the use of power. This increased the demand for electrical power plants, transformers, circuit breakers, etc., as well as for power-absorbing equipment. Similarly, the demand for radio equipment of all kinds increased enormously and included the developments known as radar, first applied to the detection of aircraft and later to submarine detection, gun ranging, communication and navigation.

Apart from special war devices there were other noteworthy new developments. The use of hydrogen cooling in large turbo-alternator sets and synchronous condensers was essentially a United States development. The adoption of hydrogen cooling in Great Britain was a slower process, because of the lower speed of British alternators, but the keen desire to increase over-all efficiency of generating plants stimulated interest in hydrogen cooling. Air-blast circuit breakers, initially proposed in the United Kingdom as a result of work carried out by the Electrical Research association, were developed mainly on the continent during the early 1930s. In that period, British designs were mainly of the oil-blast type followed later by the low-oil-volume type of circuit breaker. Later a much greater interest in the air-blast design developed in Great Britain. The Central Electricity board did much to foster the manufacture of this type of switchgear, and both 66 kv. and 132 kv. gear incorporating air-blast breakers were put into operation on the grid.

Alternators suitable for direct generation at 33 kv. were introduced in Great Britain in 1936, and there was a gradually increasing demand for machines of this type. The desire for increased thermal efficiency of power plants brought about the use of increasingly higher steam temperatures and pressures. The Battersea power plant was extended to employ a steam temperature of 950°-960° F. The alternator was rated at 60,000 kw., 3,000 r.p.m. and hydrogen cooling was used. Developments in regard to high voltage cables were concerned with oil-filled and nitrogen-pressure types. Several installations of each of these were made on the grid for operation at 132 kv. During 1944 two further installations of nitrogen-pressure cable were commissioned, which made use of mass-impregnated paper dielectric in place of the preimpregnated

per dielectric used in the earlier installations. Several lengths of 132 kv. oil cable were in service on the grid in 1946, including the cables laid in the bed of the Orwell river to transmit the output of the new Cliff Quay power station at Ipswich.

New Trends and Applications.—Increasing interest in automatic control methods and equipment for the control of industrial processes led to the widening application of automatic combustion control for boiler plant, unified control of boiler auxiliaries, and automatic thermionic control of industrial heating, industrial handling and chemical processes. Thermionic control also assumed a most important role in electric welding processes and in flame cutting. Successful application of the principles of induction and dielectric heating on an industrial scale began before World War II in such operations as the heat treatment and melting of metals, the moulding of plastics, the cementing of leather, plywood and safety glass and the drying of tobacco.

Considerable interest developed both in Great Britain and other countries in the possibilities and advantages afforded by the heat pump for large space-heating purposes. The advantages of the heat pump were greater when cheap power was available, as in the case of countries having extensive hydroelectric development, a factor which encouraged its application in Switzerland. Installations were also made in the U.S. and in Great Britain, in the latter case being experimental in character.

Electric lighting, one of the first extensive commercial applications of electricity, underwent continuous development. An outcome of work done by the research laboratories of the members of the Electric Lamp Manufacturers Assn. was the fluorescent lamp, which became available in Great Britain in 1937. Large-scale production of this new type of light source was retarded by an endeavour to improve uniformity and interchangeability, and the outbreak of hostilities postponed production except for priority applications; nevertheless, these lamps played an inestimable part in the field of munitions production by providing high levels of illumination in factories in spite of blackout conditions.

Glass insulation, developed in the United States, the use of silicones and new magnetic materials were exploited in the industry. Organo-silicon compounds were developed for this purpose, and much work was carried out in the United States and Great Britain on such materials, which were produced in a variety of forms; e.g., resinous solids and liquids, liquid lubricants and greases, water repellents and rubber-like compounds, their common characteristic being stability over an unusually wide temperature range. The development of powder metallurgy resulted in new and improved magnetic alloys, such as aluminum-nickel-cobalt for special purposes.

Soviet Union.—Of large Russian electrical power plants, 59 were totally destroyed during World War II, involving an aggregate capacity of 3,000,000 kw., apart from smaller stations. New stations in the south helped to alleviate the power position. Much of the damaged Donbas power plant was reported to have been reconstructed, and 8 of the stations in the Leningrad district, which were completely destroyed, were restored to about 60% of prewar capacity. Thus, 58 power plants with a total output of 1,600,000 kw. were reconstructed in the soviet union between 1942 and 1946, and the prewar level was reached by the end of 1946. The final 3 years of the fourth five-year plan were to be devoted to the extension of electric power

220 plants to produce an additional 11,700,000 kw., so as to bring the total electrical capacity to 22,700,000 kw. as fixed by the plan. The estimated water-power resources of the soviet union were about 280,000,000 kw., and the plan was to increase the number of large hydro-stations to 49. New stations were contemplated in the Moscow district, in the Donbas district and at Rostov on Don. It was stated that the soviet government planned to make extensive use of high pressures and temperatures in steam plants, to extend the application of automatic control and to utilize, as far as possible, extra high-tension direct current for high-voltage transmission over long-distance lines. The construction at the Leningrad Metalicheski Zavod (Leningrad Metal Works) works of a high-pressure turbine was reported, the first of its kind and rated at 100,000 kw.; the working pressure of this machine was go atmospheres and its speed 3,000 r.p.m. Large hydroelectric turbines of 100,000-kw. capacity rating were also under construction.

Sweden.—Interesting experiments were carried out in the search for a solution to Sweden's power supply problem. Most of the water power worth harnessing continued to lie in the northern regions of the country, and in order to cover future increased power requirements new hydro plants would have to be built farther and farther away from the load centres in the central and southern regions. This would necessitate transmission of large blocks of power over long distances. Experimental work was in progress for the purpose of investigating the possibilities of extra high tension (E.H.T.) D.C. transmission. Large grid-controlled mercury arc rectifiers made the use of D.C. for high-voltage transmission systems possible. The Swedish Royal Board of Waterfalls and the Allmanna Svenska Elektriska Aktiebologet co-operated in the installation of 50 km. of experimental E.H.T. D.C. transmission line between Mellerud and Trollhattan, capable of transmitting 6,500 kw. at 90 kv. Another interesting experiment carried out in Sweden concerned the practicability of using the sea as a return conductor in an E.H.T. D.C. transmission circuit.

Switzerland.—Problems associated with the transmission of power over long-distance lines were investigated in Switzerland, particularly in regard to the use of voltages up to 400 kv., the design of suitable transformers of radial core type and air-blast, high-speed circuit breakers, the desirability of multiple breaking and automatic reclosing, as well as general questions relating to the stability of operation with g-phase power transmission over distances up to 1,000 km. The use of high voltage D.C. for power transmission was also developed. Interesting progress was made in the development and adaptation of the gas turbine for locomotives, marine drives and for electrical and industrial power generation. The first locomotive of this type was placed in service on the Swiss railways in 1941 and was rated at 2,200 h.p.; it was claimed that without substantial increase in weight or dimensions a locomotive of about twice this rating could be used. The gas turbine unit for electricity generation was constructed for ratings as high as 10,000 kw., an example being that built by the Swiss for the Filaret power station, Rumania.

France.—As in other countries where a large amount of power had to be transmitted over long distances, France had the problems of E.H.T. transmission under consideration and used a 220-kv. overhead network as well as a 220-kv. cable link; the latter was about 20 km. in length and ran between Clichy and St. Denis. In the overhead line between the massif central and Paris, the towers were constructed so as to be able to carry a single circuit at 400 kv. if future development so demanded, and meanwhile to carry 2 horizontally disposed circuits at 220 kv. A feature of the French network was the extensive use made of carrier current installations for intercommunication between substations and terminal units, for telemetering purposes and for protection equipment. Experimental interconnections of this type were also tried to measure the phase angle between distant points on the system, as a means of determining the degree of stability of the network. Circuit breakers of 3,500 mva. capacity were found necessary, in place of the 2,500-mva. units originally installed, in order to deal with the short-circuit currents arising under fault conditions, and all switches were designed for high-speed phase-by-phase disconnection. Rapid reconnection after fault conditions was also under experimental investigation. An interesting innovation in the French networks was the development in use of automatic load shedding. Under wartime conditions, much use had to be made of distant sources of supply at full capacity, and the tripping of such a line overloaded and tripped all other lines working at full capacity unless correction measures became operative within one second. To meet these conditions, frequency relays were developed capable of rapidly cutting out groups of consumers, thus shedding load immediately in appropriate areas in order to avoid complete tripping of the whole system. Considerable success was achieved by this means, and the method was regarded as offering advantages for wider future application.

Germany.—The air-blast type of switchgear was preferred in Germany to low-oil-volume types for voltages of 110 kv. to 220 kv., but performance was not satisfactory; this was because of the extreme economy of materials exercised by the designers. Experience with the watertype breaker was, however, satisfactory for voltages up to 30 kv., especially in those designs which utilized a series isolating switch separate from the interrupting element. Appreciable use of this type of breaker was apparently made. A transmission project which had reached the design stage during World War II comprised a 600,000-kva. line to operate at 400 kv. alternating current (A.C.) and intended for a 480-mi. stretch between the Alps and Cologne. As a result of corona loss tests carried out on a 500-m. experimental line, it was planned to use 4 steelcored aluminum conductors in parallel for each phase, using a 10-in. spacing between these conductors. Singlephase transformers were intended, and the system was to be protected by Petersen coils with movable iron cores; air blast switches rated at 400 kv., 1,000 amp. and 6,500 mva. rupturing capacity formed part of the design. Experiments were also carried out in Germany during World War II on E.H.T. D.C. transmission, in connection with the possibility of transmitting power from Norway to Germany. A short experimental line was built, transmitting 8,000 kw. at 60 kv., rectification and inversion being carried out by airblast type arc rectifiers. Further experiments were conducted using 110 kv. overhead lines for 10,000 kw., and based on this work a 400-kv. D.C. 160,-000-kw. system was planned for a 100-mi. line from a station on the Elbe to Berlin, but though advanced in construction, this installation had not been put into operation before the close of hostilities.

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Electric Lighting

See ELECTRICAL INDUSTRIES.

Electric Transmission and Distribution

See ELECTRICAL INDUSTRIES.

Electric Transportation

The usefulness of electric transportation was never more strikingly demonstrated than during the decade 1937–46, when it handled an increase of 35% in riding with almost no increase in equipment. Its greatest development was naturally in the larger cities, where it consistently handled nearly four-fifths of the total number of riders; but in many of the smaller cities, too, electric transportation remained predominant.

Electric motive power in the transportation of passengers and freight on the trunk-line railroads in the United States also demonstrated its value convincingly during the 1937–46 decade, when the volume of traffic reached an all-time peak. No clear-cut line of demarcation existed between the local and trunk-line fields of electric transportation. In some instances, local service was extended until it assumed a character closely akin to that of a trunk-line railroad. In other instances trunk-line railroads undertook electric service of a purely local character. Despite a certain amount of overlapping of functions, however, it is possible to consider electric transportation broadly under two heads: (1) local electric transit service and (2) electrified railroad service.

Local Electric Transit Service.—Urban electric transportation lines as a whole in the United States experienced an increase in the number of passengers carried, from about 10,000,000,000 in 1937 to more than 13,000,000,000 in 1946. The largest gross increase was in the traffic handled by the surface electric railway lines. A larger proportionate increase, though smaller in gross, was recorded by the electric trolley coach, or "trackless trolley" lines. On the rapid transit lines—elevated railways and subways—the volume of riding remained relatively constant.

Interpretation of the significance of this increase during the decade 1937–46 requires brief consideration of the prior developments in this field. Electric operation of street railways was the first widely adopted form of electric transportation. Starting at Mobile, Ala., in 1886, electric street railway transportation had spread rapidly in the following years to a large number of cities in the United States, and subsequently to other countries. It was instrumental in extending the populated areas of cities far beyond their former limits. It served also, in the form of interurban lines, to connect many communities separated by short distances. The early success of the electric railways, however, led eventually to excessive expansion. Many lines were built where there was insufficient traffic to sustain them.

Generally speaking, the number of passengers carried by the electric surface railways in the United States increased steadily until 1924. Then began a long period of steady decline, caused in considerable measure by the substitution of motorbuses on light traffic lines.

The beginning of the decade 1937-46 found the downward trend proceeding at a fairly rapid rate. By 1940, the annual total of passengers had dropped from a peak of 13,500,000,000 in 1923 to a little less than 6,000,000,000. In 1941, however, the downward trend was arrested. Before the end of that year the growth of industrial activity in connection with the national defense program had stimulated the use of public transportation services to a point where every available vehicle was needed. The Office of Defense Transportation, having authority over all forms of rail, highway and inland-waterway transportation in the United States, ruled early in 1942 that no further replacements of railway service by bus service should be made for the duration of the emergency. This ruling halted abandonments, and the growing difficulties of obtaining gasoline and tires for the operation of automotive vehicles caused the riding on electric railways to increase rapidly. By 1945, the number of passengers carried was approximately 9,500,000,000 or about 60% more than it had been a few years earlier. With the end of the war the volume of street-railway riding decreased slightly, as did riding on all forms of public transportation. The change was relatively small, however, and preliminary figures for 1946 indicated a total of more than 9,000,000,000 passengers carried during that year.

Another form of electric transit service—that of the electric trolley coach—registered a much larger proportionate increase than did the surface railways. The electric trolley coach, first called a "trackless trolley" because it somewhat resembled a streetcar running on rubber tires instead of steel rails, was originally introduced on a commercial basis in 1910, but had almost disappeared from U.S. cities by 1928, when it was revived as a result of improvements in design.

In 1937, trolley coaches in the United States carried only one-third of 1,000,000,000 passengers, while in 1946 they carried more than 1,250,000,000. This was a gain of more than 300%, the largest for any type of transportation service.

Since the increase in trolley-coach riding was exceptional, it was evident that factors other than the general increased use of public transportation were at work. Chief of these was growing public enthusiasm for this particular type of vehicle because of its quiet, speedy operation, the convenience of curb loading, and the comfort of the coach itself. Opinion polls taken among users of public transportation service in cities in all sections of the United States showed the trolley coach to be the best liked of all forms of public transportation. In some instances the proportion of people expressing preference for the trolley coach ran more than 90% of the total.

The majority of the trolley coach lines in the United States continued to be operated as substitutes for street railway lines, although there was a growing tendency for trolley coaches to replace motorbuses. To some extent the passengers carried by the trolley coaches represented business that would otherwise have been handled by streetcars or motorbuses, but, in most instances, the trolley coach service carried far more passengers than the service which it replaced.

The third important type of urban electric transportation service is that furnished by the rapid transit lines elevated railways and subways. Development of this type of service was slow on account of the extremely high cost of the facilities. Moreover, the removal of a number of the early elevated railway lines during the decade offset



Chicago's first subway, 41/2 mi. long, was opened Oct. 17, 1943

to some extent the construction of new subways.

Like other types of transit, the rapid transit lines registered an increase in business during the decade 1937–46. The gain, however, was relatively small. Passengers carried in 1937 totalled about 2,250,000,000. In 1946 the number was about 2,500,000,000. This comparative stability in volume of riding is explained by the fact that the rapid transit lines were generally located in areas which experienced only minor increases in industrial activity during the war.

Plant and Equipment.—To handle the largely increased volume of riding during the war years, the electric surface railways made far more intensive use of their plant and equipment than at any previous time in their history. Before the war these lines were carrying about 300,000 passengers per mi. of track per year. At the peak of the war effort they were carrying 575,000 passengers per mi. of track.

Trackage of the surface railways totalled about 24,000 mi. at the beginning of the 1937–46 decade as compared with more than 40,000 mi. in 1923 before large-scale substitution of buses and trolley coaches. By the end of 1941, the trackage had shrunk to approximately 17,000 mi. Thereafter, under the regulation of the Office of Defense Transportation, there were no further abandonments of any consequence.

In place of the electric railway track abandoned during the years 1937-46, about 1,600 mi. of new trolley coach line were put in operation. This was done for the most part on routes where riding was fairly heavy, but the track was in need of replacement. Substitution of trolley coaches saved expense and almost invariably increased the volume of riding.

On a large majority of the other routes where electric railway operation was given up, motorbus operation was started by the same or other companies. In many instances this proved advantageous from a financial standpoint, as the motorbuses were able to handle the comparatively light traffic at low cost. In the relatively fewer instances where substitutions were made on heavy traffic lines the financial advantages were less clearly evident. A minor part of the abandoned rail routes, where the riding had been of least density, remained without public transportation service of any kind.

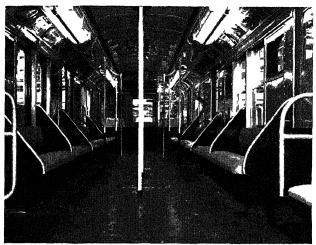
Throughout this period the total mileage of rapidtransit track remained virtually unchanged. High cost of construction, as well as restrictions imposed by the war, limited subway extension to not more than a few miles. Such extensions as were made were counterbalanced by abandonments of elevated railway lines.

Trends with respect to rolling stock from 1937 through 1946 generally paralleled those with respect to trackage. In the 1920s the electric surface railways had a total of more than 60,000 cars, including open cars for summer use, and unserviceable vehicles waiting to be scrapped. The total available for operation at one time was probably not greatly in excess of 50,000. By 1937 this had been reduced to 37,000 and by the outbreak of World War II to about 27,000. From then until the end of 1946 the number did not change greatly. Thus, the railways had 10,000 fewer cars with which to handle a 35% increase in traffic during the war years. They were able to do it first, because staggered business hours distributed the volume of riding more evenly throughout the day, and second, because improvements in rolling stock design permitted each vehicle to handle more passengers per day than had formerly been possible.

In the field of trolley-coach operation, the number of vehicles in the ten-year period increased at a rate which was somewhat more rapid than the increase in mileage of line, but not so rapid as the increase in passengers—a natural result of growing popularity of this type of service. The number of rapid transit cars remained virtually unchanged throughout the decade.

No widespread changes occurred in the ownership of plant and equipment during 1937-46. Several important transit systems were acquired by the municipalities in which they operated, but these changes were not indicative of any general trend. The New York city board of transportation took over the Interborough Rapid Transit company and the Brooklyn-Manhattan Transit system in 1940. The city of Cleveland acquired the Cleveland railway in 1942. In San Francisco, the Municipal railway absorbed the Market Street railway in 1944.

Vehicle Design.—From the standpoint of vehicle design, the decade 1937–46 was probably the most important in the history of surface electric railways, because it witnessed the practical culmination of years of experimental research. Development of automotive vehicles running on rubber tires had earlier convinced the leading electric-railway operators in the United States that drastic changes were necessary in traditional streetcar design to provide comfort and speed equivalent to that of the private automobile. For this purpose the Electric Railway Presidents' Conference committee had been formed, and \$1,000,000 had been spent on research. The outgrowth of this undertaking was a radically different type of streetcar with scientifically engineered rubber springs to reduce noise and



New subway cars featuring fluorescent lighting and fast-action doors were designed to replace many outmoded cars operating through New York's network of underground traffic in 1946

promote riding comfort, together with new types of motors and controls for smooth, rapid operation.

About 200 vehicles of this type, called P.C.C. cars in recognition of the work of the Presidents' Conference committee, were in service in U.S. cities at the beginning of 1937. Their superiority over previous designs was so marked that widespread demand for them arose almost immediately. By the end of 1946 more than 3,000 P.C.C. cars were in service on a score of electric railway systems in the United States and Canada. The largest installations were at Pittsburgh, Pa., and Washington, D.C., with 566 and 489 cars respectively. Philadelphia, Boston, Baltimore and St. Louis were among other cities with large installations.

Improvements in the design of the P.C.C. car continued throughout the decade. One was the replacement of the conventional compressed air brakes by complete electric braking. With all other devices such as door engines, windshield wipers and the like operated electrically, the need for compressed air on the car was entirely eliminated. Further evolution took place in truck design for simplicity, lightness and greater flexibility in springing. "Standee" windows were introduced for the convenience of standing passengers. Ventilation was improved by means of air ducts through a monitor roof and large fans capable of changing the air in the car several times per minute. Under this arrangement the car was much more comfortable in hot weather.

Many of the improvements developed in connection with the P.C.C. car found application in the design of articulated units for rapid transit service in Brooklyn and Chicago. These units, however, were experimental in nature, and rapid transit rolling stock in general remained of conventional design. In the latter part of 1946 the New York city board of transportation ordered 400 new subway cars embodying a number of features of P.C.C. design.

An outstanding design development in the trolley coach field was the successful adoption of air conditioning on a vehicle for city service. The attractive features of air conditioning for transit vehicles had long been recognized, but the rapid interchange of inside and outside air resulting from frequent door opening made it difficult to provide a sufficient volume of cooled air to maintain a comfortable inside temperature in hot weather. However, the electric trolley coach had an unlimited supply of power available to operate the air-cooling apparatus, and it was

decided to make the experiment. The first vehicle of this type was put in service in Atlanta, Ga., in the summer of 1945. It was received by the public with such marked enthusiasm that 30 more of the same type were ordered almost immediately. All indications pointed to the Atlanta innovation as the first step in widespread adoption of air conditioning for electric transportation vehicles.

Postwar Outlook.—As a result of the remarkable record made by electric transit service during World War II, as well as the notable advances made in vehicle design, the outlook for this type of transportation appeared brighter at the end of the decade than at any time for years past. Postwar city transportation plans under discussion in cities all over the United States gave a prominent place to electric transportation.

Many improvements were planned for the rapid transit lines in the city of New York. Subway extensions were in prospect at Chicago. A combination of rapid transit and suburban railroad lines was under consideration at Boston. New subway projects were being discussed for Detroit, Cleveland and San Francisco.

Modernization of electric surface railway lines was under way in many cities, including Chicago, Philadelphia, Detroit, St. Louis, Minneapolis, Cleveland, Kansas City, Birmingham and others. During the first year after the removal of wartime restrictions, orders were placed for approximately 1,300 of the popular P.C.C. cars. On this basis, transit authorities anticipated that about 5,000 to 6,000 of the new cars would be placed in service within a few years, giving the surface electric railways as a whole a total of about 10,000 modern vehicles. Replacement of the remaining surface rail cars was expected to be made largely with electric trolley coaches, or with motorbuses on some of the lighter traffic lines.

Great expansion of electric trolley coach operation appeared likely in many cities throughout the United States. Among the larger programs announced were those involving 435 vehicles for Brooklyn, 250 for Cleveland, 250 for Atlanta and numbers only slightly smaller for Los Angeles, Boston, Philadelphia, Memphis, Milwaukee, Kansas City, Cincinnati, Denver, Providence, San Francisco and other important cities. While most of these plans involved the substitution of trolley coaches for streetcars, it was significant that numerous cities had already made, or were planning to make, substitutions of electric trolley coaches for motorbuses on some routes. At Newark, N.J., it was proposed to pave the track area of the city subway and use it for electric trolley coaches instead of streetcars.

Advantages attributed to the electric trolley coach included low operating and maintenance cost, a superior safety record and popularity with the public. Moreover, it was generally considered to be quieter than the motorbus, and the absence of fumes was widely cited as a highly desirable characteristic.

In Central and South America, where electric transportation had reached only a moderate state of development before World War II there seemed little prospect of notable advance. In Australia, on the other hand, interest was shown in new vehicle designs and improvement of electric transportation in general.

Electrified Railroads.—More intensive use was made of the electrified trunk-line railroads in the United States during the 1937–46 decade than at any previous time. Since most of the electrified trackage was still operated in conjunction with steam trackage, separate statistics were not available for passengers and freight carried. What

happened on the four-track, 226-mile electrified New York-Washington line of the Pennsylvania railroad, however, could be taken as characteristic in some degree of all the electrified railroads.

The decision to electrify this line for its entire distance had been made during the period of widespread railroad improvement that followed World War I. Electrification was completed in 1935 and resulted in a reduction of several millions of dollars a year in operating expenses.

The greater track capacity made possible by the use of electric power on this line was of inestimable value in World War II. During this period the New York-Washington line was the busiest stretch of railroad track in the world. For the four years, 1942 through 1945, it carried nearly 200,000,000 passengers, often more than 200,000 in a single day. The freight transported during these four war years was approximately 160,000,000 tons. Wartime traffic was exceptionally heavy also on most of the other electrified trackage of the Pennsylvania system and other railroads. Under these circumstances the use of electric power proved highly advantageous.

The heavy wartime traffic carried by the electrified lines was handled with virtually no increase in plant and equipment. At the beginning of the 1937-46 decade there was a total of 6,135 mi. of electrified track in operation on the Class I railroads in the United States. By the end of the ten-year period this had increased to about 6,650 mi. The number of electric locomotives increased from 743 to 745.

Of interest in the field of vehicle design was a postwar trend toward larger electric locomotives on some railroads. Two 5,000-h.p. units were ordered by the Great Northern for its electrified Cascade Tunnel section. With an overall length of 100 ft. and weighing 720,000 lb. each, they were the largest single-cab locomotives ever built. An even heavier type, weighing 1,000,000 lb., but built as a two-cab unit, was developed for the Virginian railway to haul coal trains over the Allegheny mountains. Four of these were ordered. They were the heaviest and most powerful locomotives of any kind ever built.

While the number of electric locomotives remained constant, it was significant that the number of Diesel-electric locomotives increased from 175 to 3,009. Undoubtedly the rapidly growing use of Diesel-electric motive power had a material effect on the electrification of trunk-line railroads. A possible development of the future was a gas-turbine locomotive with electric drive.

Two major electrification projects had long been under discussion. One involved the extension of electric operation on the Pennsylvania from Harrisburg to Pittsburgh. The other involved electrification of the main line of the New York Central from Harmon, N.Y., to Buffalo, N.Y. Extensive tests of Diesel-electric operation were made on both these lines.

From the operating standpoint, the Diesel-electric locomotive had an important advantage in being a self-contained unit capable of operating wherever there were tracks, while the electric locomotive was restricted to trackage where electric power was available. Moreover, the first cost of providing power supply equipment was high. This factor of first cost tended to limit electrification to lines with unusually dense traffic or where special conditions existed to make electrification economically sound.

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Great Britain and Europe.—World War II very largely stopped the development of electric transportation in Europe, and existing installations suffered varying degrees of destruction. In some neutral countries, however, particularly Sweden and Switzerland with their well-developed hydroelectric resources, there was a continued or even accelerated growth of the electrified mileage because of the acute fuel shortage. This shortage further forced attention upon electrification in postwar reconstruction plans; France announced a further extensive undertaking.

The choice of system was still a matter of consideration. Early in 1946, the French railways examined the whole question afresh and confirmed the extension of the existing 1,500 volts system for their new work. Two main systems were used in Europe. With some exceptions, single phase A.C. at 16% cycles, 15,000 volts was the rule for central Europe and Scandinavia, and 1,500 or 3,000 volts D.C. was used in Great Britain and the Latin countries of Europe. No new system was put into operation after the electrification in 1936 of the Hollental line, an experiment carried out by the German state railways. Established control systems for locomotives and multiple unit stock remained with the general use of electropneumatic rather than magnetic contactors. On A.C. systems, the growing power of the largest locomotives tended to make the usual low-tension tapping switch impracticably heavy, and an arrangement was developed with a fixed ratio step-down transformer and a separate high-tension autotransformer with a tapping switch. On D.C. lines, two alternative control systems were developed. The Metadyne, which originated in Italy, was tried to a limited extent on locomotives in France. This converter comprised a single armature cross-magnetization machine which handled all the power supplied to the motors. At starting it gave a steady current at variable voltage, thus eliminating all irregularities of tractive effort, and it was used at stopping to permit regenerative braking down to a standstill, with a consequent saving of energy and reduction in brake-block wear. It was fitted to more than 200 vehicles in a very intensive urban service in London, but its extension in more general service was precluded on economic grounds. The second new system was designed primarily to produce a locomotive which would maintain its tractive effort when passing over gaps in a third rail system. By this system, energy was transmitted to the motors through two reversible booster sets.

These sets incorporated large flywheels which stored sufficient energy to maintain the tractive effort across a long gap.

Single-phase motors improved in design. Fabrication and design in Swiss A.C. motors reduced the weight per h.p. from 18.7 lb. to 9 lb. in motors of comparable size. a remarkable reduction compared with the weight per h.p. of D.C. motors, the best of which were 19 lb. per h.p. Under the pressure of demands for trains of greater speed and capacity, considerable progress was made in the reduction in the tare weight of rolling stock by the use of light metals and improvements in design. In England, new lightweight all-steel stock for suburban work showed a reduction in weight of 21%, as compared with standard stock of the same seating capacity. Great advance was made in welding technique, although experience in the fabrication of high-tensile steels was not entirely satisfactory. Most continental European countries had, up to the outbreak of World War II, developed lightweight electric rail car services which operated at high speeds, and

many of these were being restored in 1946. Remarkable speeds were attained in Italy on the direct Appenine line between Florence and Milan, where a top speed of 126 m.p.h. was reached with a pass to pass average of 109.2 m.p.h. over a 124-mi. stretch. These three-car articulated streamline sets took 94 passengers, with kitchen and baggage accommodation, and weighed 115.5 tons. The weight reduction of locomotives could not be carried beyond the point where adhesion was affected, but the Swiss railways developed units of high power-weight ratio. In that country terrain difficulties, gradients and sharp curves imposed restrictions on very high speed running, but locomotives of high power-weight ratio, able to maintain a good speed on gradients, enabled fast schedules to be introduced. The Swiss Federal system had for some time possessed the most powerful locomotives in Europe. In 1982, it had an articulated 14-axle 270-ton locomotive rated at 8,000 h.p. continuously.

In 1939, a similar unit which was some five tons heavier, rated at nominally 12,000 h.p., was introduced. Later units were built as two separate portions capable of independent use.

The outstanding development in locomotive mechanical design was the disappearance of the side-rod drive on new designs, except for shunting units. On the Swedish state railways, where local conditions seemed to favour the side-rod drive, locomotives with individual quill drive were introduced in 1942. In Switzerland, the early arrangement of jack shafts and connecting-rod drives was replaced by various forms of individual drives. In 1946, the Lotschberg railway introduced a four-axle, double-bogie locomotive of 4,000 h.p. weighing only 88 tons, remarkable both on account of the high power for a locomotive of its wheel arrangement and on account of its use of the Brown Boveri spring-disc flexible drive.

The axle-hung motor was used on the great majority of low- and medium-speed locomotives and on multiple-unit stock, but flexible drives of many different types were universal on express locomotives and on some few high-speed rail-car sets.

The effect of World War II on the development of Diesel-electric traction was very severe, as the natural line of development for those countries not at war was towards electrification. In Great Britain, the London, Midland and Scottish Railway company demonstrated the superiority of the Diesel-electric locomotive as a shunting unit. On the continent, before the war, the stage of progress as in the U.S. was that of the multicar streamline train, with a considerable number of single-rail car services. In Germany, where the original Flying Hamburger was introduced in 1933, 14 3-car sets of 1,000 h.p. each were built

in 1938. The Netherlands railways, which had introduced Diesel-electric traction at about the same time, had 18 5-car sets on order at the beginning of the war and intended to operate every nonelectrified express train in Holland by Diesel power, with the exception of international trains. In France, postwar plans were drawn up to re-establish developed railcar services, and two main-line Diesel-electric locomotives, which were delivered to the national railways in 1938 and kept out of service throughout the war, were put into service. These locomotives of 4,000 h.p. were originally intended for the Paris-Mentone run of 620 mi. in ten hours.

The most significant development was the gas-turbine electric locomotive built by Brown Boveri in 1939, in use on the French railways in 1946. This unit had an output of about 2,000 h.p. and weighed 92 tons. It used a cheaper grade of oil than the Diesel locomotive but had a lower thermal efficiency.

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Electrification, Rural

See RURAL ELECTRIFICATION.

Electronics

The art of using electron tubes for harnessing electrons to the service and destruction of man progressed so rapidly in the decade 1937–46 that historians might well designate this period as the birth of the electronic era. Admittedly many of the new and successful applications of electronics came into existence only because of complete abandonment of economic considerations under extreme pressure of military necessity.

Already, however, the natural and evolutionary simplification of complex and uneconomical electronic apparatus was well under way.

As one example, an electronic calculator urgently needed during World War II for preparing ordnance firing tables was successfully completed with 18,000 tubes and a structure filling an entire room, at an expense so high that in normal times the project could not have been started by even the largest industrial concerns or research laboratories.

With initial research costs and experimentation paid for, however, it became entirely feasible to build simpler yet equally efficient machines.

Electronics assumed two roles-improving existing equip-

Route Mileage and Systems in Operation on Electrified Lines in European Countries*
(Statistics published in the Railway Year Book 1946–1947)

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France	1,736 1,416	2,194 1,459	458 43	86 158	86 158		1,537 52	1,995 52	458	29 1,206	29 1,249	43				84	84
Great Britain	679 211	958 211	279	628	907	279	62	9 62		10 149	10 149					32	32
Italy	2,945 146	4,400 349	1,455 203	45	45		884 146	2,189 349	1,305 203	12	12		1,079	1,229	150	925	925
Norway	257 29 126	409 65 156	1 <i>5</i> 2 36 30				29 126	65 156	36 30	224	376	152				33	33
Spain	380 1,770	576 3,421	196 1,651				362 64	558 64	196	1,706	3,357	1,651	18	18			
Switzerland	2,276 12,658	2,793 17,743	517 5,085	917	1,196	279	87 3,478	87 5,706	2,228	1,813 5,716	2,330 8,144	517 2,428	1,097	1,247	150	376 1,450	376 1,450

^{*}This table does not take into account wartime suspensions and postwar restorations of services.

ment and techniques and making possible entirely new devices. Industrial applications fell chiefly into the first category, while military electronic devices were preponderantly new. Both roles combined to speed final Allied victory in World War II, bringing forth an output of new scientific developments unparalleled in the history of man and simultaneously converting these to practical reality and mass production.

In industrial electronics the three leaders during the decade were electronic control of resistance welding, radio-frequency heating and rectification of power with mercury-arc tubes. The first two achieved prominence after 1936, while the last was one of the oldest industrial applications of electronics and possibly also the most extensive on a world-wide basis. Voltage regulation, motor control, remote position control, photoelectric applications and a host of other items furnished still more fascinating electronic achievement stories for the eventful decade, even though the nature of their use precluded mass adoption by all industries.

Welding Control.—Resistance welding is done with the heat generated when two pieces of metal, squeezed together, resist the passage of an electric current through their junction. Electronic equipment was perfected automatically, controlling the amount of welding current and the time of flow to assure absolute uniformity of each weld even on machines making hundreds of welds per minute.

Resistance welding was the only method of metal fabrication at the end of the decade which added no weight to the material. Foil as thin as 70 millionths of an inch could be spot-welded to leads, and two pieces of heavy steel one-half inch or more in thickness could be welded together. In fabricating modern lightweight alloys used in aircraft manufacture, split-second timing and exacting control of current and electrode pressure were vital to high-quality welds of uniform strength. Electronic welding control could send accurately controlled current stabbing through the metal as many as 1,800 times a second—"sewing" plane parts together faster and stronger than ever before.

Spot welding, projection welding, seam welding and butt welding are different types of resistance welding. With electronic control all four types became invaluable in speeding production, reducing costs and performing jobs that would be impossible without electronics.

Electronic Heating.—This covers the application of high-frequency current to two broad fields—the induction heating of conducting materials such as ferrous and nonferrous metals and the dielectric heating of nonconductors such as plywood, plastics, textiles, rubber and foods. Both fields used exactly the same electronic equipment during the decade, and differed only in the respect that energy was transferred to the material by coils in induction heating and by metal-plate electrodes in dielectric heating.

In induction heating the part to be treated is placed in or adjacent to a water-cooled coil carrying a high-frequency alternating current. The magnetic field thus produced induces a current in the surface of the part or to any desired depths and causes the part to heat largely by resistance losses.

Electronic induction heating had many advantages over older methods, including speed, the ability to heat only localized parts of a metallic object, accurate control of temperature and heating time and heating of metals covered by coatings or enclosed in glass.

Production soldering of parts or assemblies while travelling on a continuously moving conveyor belt is an elec-

tronic power application in which the areas to be united are selectively heated by induction. In the manufacture of oil-filled capacitors the metal containers have their lids soldered in place to provide a sealed oil-tight unit. By using a conveyor belt to pass these capacitor cans between two coils in which current from a radio-frequency generator is flowing, this soldering is automatically accomplished at a very rapid rate.

As another example of induction heating, a certain piece of equipment required a setscrew that had its slotted end hardened to permit repeated removal with a screwdriver without damage. The other end had to be left unhardened so that it would seal properly to effect a gas-tight seal. A small turntable was used to swing the setscrew through a hairpin-shaped coil carrying radio-frequency currents. These caused the slotted end of the setscrew to be heated sufficiently for hardening. The setscrews then automatically dropped into a water quenching bath. The hardening was confined to a depth of about one-tenth of an inch at the slotted end, with the remainder of the setscrew unchanged.

The oven-baking of paint on metal radio tubes had been a space and time consuming process. If, however, the tubes were passed through a long coil carrying radio-frequency current, heat was induced in the metal shells and baking of the paint could be accomplished in as little as 15 seconds.

Shaking a beanbag up and down a million times per second to heat the beans by friction is a very rough analogy to electronic dielectric heating. The nonconducting mass to be heated is placed between the flat metal electrodes. When the upper electrode is positive, every electron in every atom throughout the entire mass strains upward, since opposite charges attract. When the current reverses, the lower electrode becomes positively charged and the electrons all strain downward. This occurs at the frequency of the generator, millions of times a second, so heat is developed rapidly. The method works for almost any substance that is not an electrical conductor and for such varied processes as bonding, drying, sterilizing, cooking, baking and curing.

The application of electronic power made it possible to speed up many wood-bonding processes. The ability of radio-frequency power to heat uniformly and quickly large pieces and thick sections for laminating and pressure bonding became extremely important in fields such as aircraft manufacture. Power furnished by a radio-frequency generator reduced the time cycle in the manufacture of compressed and impregnated wood propellers from nine hours to three hours. Also, a much more uniform cross-sectional structure resulted from preheating the stacked-up raw material by this method.

The same principles were applied to the construction of spars, ribs and fuselage sections where it was desirable to utilize high-temperature-setting synthetic resin glues, much more durable than previous types.

In the field of plastic moulding, the preheating of preforms (roughly formed blocks of moulding compound) by ovens or hot plates was not very satisfactory because the poor heat conductivity of the moulding compound tended to cause the outside of the preform to overheat before the inside was hot enough. Radio-frequency power heated these preforms quickly and uniformly to a high degree of plasticity, thus enabling the moulding press to operate at a much faster rate.

Thermoplastic sheets and thermoplastic-coated fabrics used in making raincoats and caps, large balloons and in the packaging of many types of food and oils were fused

or sewed together with electronic heating to give a thin solid seam both air- and water-tight, creating a bond as strong as the thermoplastic itself. The sheets to be fused together were simply run between two metal wheels that served as the electrodes for a dielectric heating setup.

Power Conversion.—In mills and mines, factories and railroads, wherever direct-current power is needed, mercury-vapour electronic tubes were installed to convert A.C. to D.C. efficiently. By 1946, three-fourths of all the direct current required for the giant aluminum and magnesium plants of the world was being supplied by these tubes, working quietly 24 hours a day. In smaller sizes these rectifying tubes had glass housings like familiar radio tubes, but the larger ones were made almost entirely of metal and looked like row on row of tanks or boilers connected by massive current-carrying copper straps. As contrasted with rotating generators, these electronic rectifiers had no moving parts and operated automatically, unattended, with high efficiency.

Sorting.—Right on the production line, accurate and tireless electronic tubes became widely used to sort coloured objects electronically and reject those that are off-colour. Other tubes sorted for height, thickness, weight or any other measurable factor. Thus, discoloured beans were ejected automatically from electronic bean sorters using photoelectric tubes; pills and tablets were sorted according to whether they were overweight, underweight or perfect; projectile fuses exposed to X-rays, with phototubes watching fluorescent screens on the other side got sorted according to whether or not they had the correct powder charge; metal objects passing through coils at faster-than-sight speeds were sorted for hardness, composition, size or other factors affecting their magnetic characteristics.

One electronic metal-sorting device brought order out of the chaos of spilled or jumbled alloy stocks and parts in machine shops by employing the triboelectric principle the same one that makes sparks when a cat's fur is rubbed backward. In this instrument an electronic circuit controlled the total operating time during which known and unknown metals were rubbed together by an electric motor, and a meter indicated the resulting voltage developed between the two pieces. Reference to a table then gave the identity of the unknown metal.

Speed Control.—The precision of electronic equipment made possible fingertip control of speed of giant electric motors, the almost instantaneous stopping of great mills when a paper or thread broke, and the regulation of speed to precise values despite extreme variations in loading of a machine. Other arrangements of controls made speed vary with such factors as torque, so that pressure on a cutting tool would remain constant during machining of irregular objects.

Protection.—Phototubes were adopted to protect operators of punch presses, metal shears and other hazardous machines by shutting off power and applying brakes when any part of the operator's body projected into a beam or fence of light surrounding the danger area. Similarly, interruption of a light beam surrounding high-tension testing equipment or high-power sub-stations would sound an alarm and cut off the power supply to the danger area.

Medical Uses.—Diathermy and X-ray applications multiplied as equipment was made simpler and more reliable in operation. Many X-ray machines were built with automatic photoelectric exposure controls to shut off the machine when the film had received sufficient exposure through the body of the particular person being examined. The radio knife, using high-frequency radio currents to destroy tissues or coagulate blood in a very small area near

the point of a needle, was used more and more for delicate operations. Sensitive electronic metal locators were employed to locate metal objects imbedded in the body. A photoelectric device developed during World War II monitored continuously the oxygen saturation in an aviator's blood by sending a beam of light through the ear to a photoelectric cell, to warn the pilot when he needed more oxygen. Electronic instrumentation for diagnosis of mental and other ailments underwent further development, along with improvements in electronic lie detectors.

Nuclear Physics.—Many huge electronic machines for whirling electrons and other particles around and around a circular orbit in a vacuum were constructed in the tenyear period, for such purposes as production of radioactive isotopes, transmutation of elements (though in microscopic quantities and at great cost), smashing of atoms and a multitude of other researches in nuclear physics that resulted in such significant developments as the atomic bomb (q.v.). One of these machines was a super X-ray generator or betatron that among other feats could actually create matter from energy. The 100,000,000-electron-volt X-rays it produced were capable of making sharp, high-speed radiographs through 12 inches of steel.

Military Electronics-Electronics became the nerve centre of the battleship, the means of locating enemy planes, ships, submarines and land installations, the means of communication between command posts and mobile units, and the co-ordinator of great air and naval fleets. It detected buried land mines, whether of metal or plastics, plotted on a map the route taken by a patrol car in darkness over unfamiliar territory, detonated underwater mines at the precise moment when a surface vessel was closest, told pilots how high they were and where they were, told the navigator on a ship how deep was the water under the hull and even enabled sight at night by converting invisible infra-red radiation into glowing visible colour on a screen. New names by the score evolved in this periodsonar for sound navigation and ranging under water, used principally for submarine detection but good for locating fish in peacetime; loran for long-range navigation of ships and aircraft by measuring time intervals between synchronized radio pulses sent out by pairs of shore radio stations; shoran for precision short-range functions of loran; radar for radio detection and range determination of objects up to 100 miles away; huff-duff for determining instantly the direction from which a radio message was coming, used during the war to locate enemy submarines that went on the air for only seconds at a time. (See RADAR; RADIO.)

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Electron Microscope

See Industrial Research; Photography; Physics.

Electrons

See CHEMISTRY; PHYSICS.

Elements

See CHEMISTRY; PHYSICS.

Elizabeth, Princess

Princess Elizabeth (1926-), heiress presumptive to the British throne, was born April 21, the eldest daughter

of the then Duke and Duchess of York. Her early tutoring was that accorded to all princesses of royal blood in England. After her father ascended the throne as King George VI, her education was revised to fit the princess for her future role as reigning queen of England.

Although the princess was the logical and presumptive heiress to the British throne, she was not entitled to be called Princess of Wales as long as there remained the possibility of the birth of a male heir; nor had she any royal duties, constitutional functions or the right of suffrage. In 1946, the British press hinted at a "budding romance" between Princess Elizabeth and Prince Philip of Greece (a nephew of her cousin, Lord Louis Mountbatten).

Elizabeth, Queen

Queen Elizabeth of Great Britain and Northern Ireland (1900—), youngest daughter of the 14th earl of Strathmore and Kinghorne, K.G., K.T., was born at St. Paul's Waldenbury, Herts., Aug. 4, 1900; she married H.M. King George VI (then H.R.H. the duke of York), April 26, 1923; to them were born two daughters, the Princesses Elizabeth (b. 1926) and Margaret Rose (b. 1930).



Queen Elizabeth and Mrs. Roosevelt on a tour of Washington in June 1939 during the visit of the British monarchs to the U.S.

On May 12, 1937, her majesty was crowned with the traditional ceremonial, after her husband, in Westminster abbey, and took part with the king in the celebrations that followed the event. In the summer of 1939, King George and Queen Elizabeth visited President and Mrs. Roosevelt in Washington and made a tour of Canada. During and following World War II, the queen was active in war and rehabilitation work. (See George VI.)

Elks, Benevolent and Protective Order of

See Societies and Associations.

Ellice Islands

See PACIFIC ISLANDS, BRITISH.

El Salvador

See SALVADOR, EL.

Embassies, Great Britain and United States

See Ambassadors.

Emeralds

See GEMS AND PRECIOUS STONES.

Emergency Management, Office for

See WAR AND DEFENSE AGENCIES.

Emery

See ABRASIVES.

Emigration

See Immigration and Emigration, U.S.

Emmons, Delos Carleton

Emmons (1888—), U.S. army officer, was born Jan. 17, 1888, in Huntington, W.Va. He was graduated from West Point in 1909 and was commissioned as an infantry lieutenant. Appointed commanding general of the G.H.Q. air force in 1939, he was designated chief of the air force combat command in June 1941. On Dec. 17, 1941, following the Japanese attack on Pearl Harbor, Gen. Emmons was appointed successor to Lieut. Gen. Walter Short as head of the army command of the Hawaiian department.

Employment

In 1939 there were 54,230,000 in the civilian labour force of the United States, and 367,000 in the military personnel. In Aug. 1945 there were 54,350,000 civilian workers and 12,245,000 military personnel; in Aug. 1946, 60,000,000 civilian and 2,812,000 military personnel. Throughout the years of World War II, the withdrawal of civilians into military service was counterbalanced by the addition of new persons to the labour force.

In Aug. 1946, with the war over, there were 4,420,000 more women and nearly 2,000,000 more males than in 1939, plus an unprecedented number of young adults in educational institutions.

The unemployed in 1939 and in Aug. 1945 and Aug. 1946 numbered as follows:

	Maies	remaies	1 otai
1939	5,350,000	1,950,000	7,300,000
1945 (Aug.)	430,000	400,000	830,000
1946 (Aug.)	1,580,000	460,000	2,040,000

The occupational distribution of the civilian employed in the same periods is shown in Table I.

Table 1.—Total Number Persons Gainfully Employed in United States; 1939, Aug. 1945, Aug. 1946

	(Average)	1945	1946
Manufactures		15,019,000	14,586,000
Trade	6,618,000	6,979,000	7,803,000
Finance and service		4,666,000	5,160,000
Government	3,988,000	5,937,000	5,394,000
Transportation and public service		3,860,000	4,000,000
Construction		927,000	2,109,000
Mining	845,000	784,000	829,000

Three facts stand out: (1) World War II had a great impact upon both employment and pay rolls; (2) the index of pay rolls, because of increased earnings per hour and much overtime work, rose more than twice as much as did the index of employment; (3) through 1946, neither employment nor pay rolls dropped back to prewar levels. The enlarged labour supply, which had resulted both from growth of population during the war years and from drawing into the labour market a large number of women and girls not previously a part of the gainfully employed population, was met in 1946 by a demand for labour larger than the prewar period. But there was an increase

of about 1,500,000 in the Table II.—United States: Indexes of Manufacturing Employment: 1937-46 (1030 = 100)

number of unemployed.

Tables II and III give the indexes of manufacturing employment and pay rolls, 1937-46. The sharp recession of employment in 1938, and even greater reduction in pay rolls, which cut wage earners' average incomes in 1938 to below 80% of 1937 levels, was followed by a dramatic rise in both employment and pay rolls from 1941 to mid-1945; followed then by a decline which carried earnings far below 1941-44, during the last half of 1945 and in 1946. The indexes make clear why there was so much discontent about

(1707-100)													
Year	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
1937 1938 1939	104.8 91.1 93.8	107.7 91.7 95.4	110.2 91.3 96.7	111.4 89.4 96.7	111.6 87.1 96.0	110.4 85.5 96.5	110.9 86.0 97.0	112.3 90.3 100.5	112.3 93.7 104.8	110.4 94.3 108.1	104.3 95.4 107.7	97.8 96.3 107.0	108.7 91.0 100.0
1940 1941	104.0 116.9	104.2 120.0	103.8 122.7	102.6 125.8	102.1 128.6	102.5 132.0	103.1 135.5	107.8 138.4	112.2 141.2	114.8 141.8	116.0 141.3	117.4 141.1	107.5 132.1
1942 1943 1944	139.8 164.8 175.0	142.3 166.4 174.0	144.3 167.6 171.6	146.3 167.7 168.6	148.0 167.2 166.7	149.9 168.8 158.5	153.4 169.8 167.7	1 <i>57.</i> 1 170.8 1 <i>67.</i> 9	159.6 170.1 166.0	160.7 170.5 164.1	161.9 171.0 163.0	164.5 177.7 163.3	152.3 168.7 167.2
1945 1946	162.4 130.2	167.5 121.9	166.0 129.9	163.0 135.9	159.8 136.2	156.9	152.1 140.8	142.1 145.0	122.4 146.7	121.4	121.7 149.1	128.4	146.9 138.3

Source: U.S. Bureau of Labour Statistics.

Table III.—United States: Indexes of Manufacturing Payrolls, 1937–1946

	(1939=100)												
Year	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
1937	102. 7	108.7	114.9	119.0	119.4	116.8	114.1	11 <i>7.</i> 9	113.8	113.8	101.2	91.8	111.2
1938	81.8	84.3	84.4	81.6	79.9	<i>77.7</i>	77.8	84.5	89.3	92.2		95.6	85.1
1939	91.2	93.9	96.0	93.9	93.7	95.5	93.6	100.0	104.2	112.7	112.0	113.4	100.0
1940	107.4	107.2	107.9	105.8	105.8	107.6	106.6	115.1	122.1	126.9	127.5	134.1	11 4.5
1941	132.6	140.3	145.9	150.2	161.3	1705	172.0	178.8	184.8	190.2	188.6	195.1	167.5
1942	200.7	208.2	215.1	221.4	228.7	234.5	242.7	254.8	261.8	270.9	280.4	287.9	242.3
1943	290.9	297.5	304.5	309.7	313.5	317.1	315.6	322.2	328.0	332.6	336.5	345.6	316.4
1944	345.1	344.7	341.3	335.0	334.3	318.1	331 <i>.7</i>	335.0	333.8	335.1	331.8	336.8	334.4
1945	335.2	344.8	341.7	333.3	318.7	314.6	298. <i>7</i>	256.2	214.2	212.7	212.3	226.2	284.0
1946	229.2	210.5	232.9	248.1	247.8	256.8	260.5	278.3	284.1	286.0	291.4	•••••	256.8

Source: U.S. Bureau of Labour Statistics.

wages among U.S. wage earners in 1945 and 1946, even though they were still high compared with prewar standards.

From the beginning of the U.S. national defense program in mid-1940 to the summer of 1944 the U.S. labour force would normally have increased about 2,500,000 but, instead, increased 5,580,000. Meanwhile, the armed forces increased 10,590,000. This increase of 16,170,000 in the gainfully employed was supplied by a decrease in unemployment of 7,030,000 and an increase in the labour force of 9,140,000.

The only time during the four-year period when the military drain on manpower caused an actual decrease in the persons available for civilian employment was from April 1943 to April 1944, when a 500,000 decrease occurred in civilian employment and a concurrent increase of 2,620,000 in the armed forces. So far as males were concerned, there was a decline of 3,580,000 in the civilian labour force in the two years, April 1942-April 1944. The female labour force, however, made the unprecedented growth of 3,560,000.

For the four-year period of rapid military recruitment, the net loss of males from the labour supply was only 10,000, although the military recruitment amounted to 10,400,000. The difference was made up by absorption of 5,530,000 male unemployed and a growth of 4,860,000 in the male labour force from youths coming to working age and old men deferring retirement or returning to employment. During the same four years, 1,500,000 females were drawn into employment from the unemployed and 4,280,000 new female wage earners.

Unemployment in the United States fell to unprecedented low figures during the war. (Table IV.) The figure dropped to less than 1,000,000 in 1944 and 1945.

Table IV.—United States: Civilian Labour Force, Military Personnel and Unemployment, 1937–46

Year	Total Civilian Labour Force	Military Personnel	Est. Unemployment	Est. Gainful Employment (Civilian)
1937	. 53,323,000	326,667	10,870,000*	46,295,000
1938	53,941,000	340,891	10,438,000	43,503,000
1939	54,230,000	367,000	7,300,000	46,863,000
1940	. 56,050,000	898,459	7,980,000	48,070,000
1941	. 56,500,000	1,897,786	4,950,000	51,550,000
1942		3,800,000	1,950,000	54,390,000
1943	. 55,440,000	8,717,922	1,070,000	54,370,000
1944		11,056,500	840,000	53,170,000
1945	. 54,350,000	12,160,000	830,000	53,520,000
1946	. 60,000,000	2,380,000	2,040,000	57,960,000

*Census of unemployment est. Subsequent rechecks indicated that this est, was too

The indexes of employment in the principal manufacturing industries are shown in Table V. The reader's attention is called to the enormous increase during the war in the transportation equipment industry; the result of the rapid expansion of aircraft manufacturing; the sharp

collapse in all indexes from 1937-38; and the tendency of consumers' goods industries (like furniture and textiles) to show sharply increasing employment in 1946 as compared with 1945.

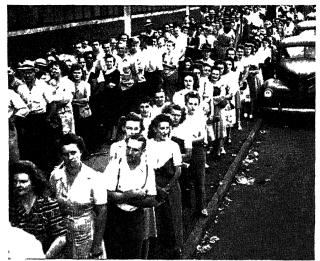
Great Britain.—The total working population of Great Britain increased from 19,750,000 in mid-1939 to 22,281,000 in mid-1943; then decreased to 20,115,000 by June 1946. (Table VI.)

The distribution of the working population between the military and civil defense personnel,

Table V.—United States: Index Numbers of Employment in Manufacturing Industries, 1937-46 (July of each year)

Industry	1937	1938	1939	1940	1941	1942	1943	1944	1945	1946
All Mfg	101.4	76.1	93.5	99.5	130.5	142.4	169.6	157.8	152.1	140.8
Durable goods	98.9	69.1	93.0	95.6	1 <i>37.7</i>	161.2	229.5	214.0	195.3	161.0
Nondurable goods	104.1	89.1	103.5	103.3	123.7	124.6	122.4	113.5	118.0	124.9
Iron and steel products	107.6	72.4	89 <i>.7</i>	106.2	1 <i>37.7</i>	135.0	172.9	167.1	156.8	139.3
Electrical machinery	121.0	72.9	86.8	103.8	163.8		273.5	277.8	254.1	194.4
Machinery, exc. electrical	129.9	82.7	95.7	116.1	172.3	211.8	235.9	219.8	209.2	194.4
Transportation equipment	119.9	55.3	79.9	97.5	179.5	292.2	1,452.6	1,277.0	993.9	290.2
Nonferrous metals	130.4	53.2	76.4	82.3	126. 9		172.6	168.4	149.3	1 <i>7</i> 3.6
Lumber, basic products	111.5	77.9	91.3	106.9	1 43.5	146.6	180.6	165.2	167.6	162.2
Furniture and finished products	72.9	54.2	66.7	68.2	79.5	73.4	115.1	102.4	124.2	143.4
Stone, clay, glass products	87.9	64.8	84.3	87.7	105.6	93.1	109.8	103.4	101 <i>.7</i>	114.5
Textile mills and fibres	71.7	55.9	79. <i>7</i>	82.4	99.6	92.1	122.1	113. <i>7</i>	108.1	132.9
Apparel and other finished products	100.0	82.2	98.1	94.5	113.2	108.2	.106.5	96.6	91.8	103,5
Leather and products	102.0	65.4	109.5	104.9	122.3	112.6	105.6	97.9	110.0	126.5
Food products	96.3	85.8	99.7	91.6	101.0	96.2	95.0	88.8	90.1	102.3
Tobacco products	124.9	116.1	135.0	135.5	144.6	1 <i>56.7</i>	118.9	114.1	127.5	129.0
Paper and allied products	60.6	57.3	65.4	62.4	65.4	64.5	95.1	89.5	83.4	90. <i>7</i>
Printing, publishing	106.0	96.7	110.1	114.7	123.0	115.6	118.9	114.2	116.4	135.9
Chemicals and allied products	124.3	103.8	110.4	118.5	138.9	158.4	257.4	202.9	223.2	162.5
Petroleum and coal products	123.5	118.3	121.8	122.9	127.4	133.9	119.1	124.4	128.0	1 <i>42.7</i>
Rubber products	96.2	68.5	78.7	83.5	111.4	101.9	158.9	157.8	160.5	180.2

In 1938 the Bureau of Labour Statistics adjusted their indices to the 1935 census of manufactures instead of to the 1933 census which had been used down to 1937. The indices for 1937 are not exactly comparable, therefore, to those for the subsequent years. The July 1938 index for all manufacturing, based upon the 1933 census, is 76.1; but the index (July 1938) based upon the 1935 census is 81.9. For durable goods the July flg., based on the 1933 census, is 55.8; based on the 1935 census, is 70.3. The effect of the shift to the 1935 census was, therefore, to raise these respective index numbers about 7%.



Queue of unemployed waiting to apply at the U.S. employment service in Detroit, Mich., during 1945

Table VI.—Great Britain: Total Working Population, Exclusive of Domestic Servants. 1939, 1943, 1945, 1946*

Sex	Mid-1939	Mid-1943	Mid-1945	Mid-1946
Males	14,656,000	15,028,000	14,846,000	14,516,000
Females			6,723,000	5,599,000
Totals	19,750,000	22,281,000	21,569,000	20,115,000
*Source: Ministry of Labour	Gazette Lond	on.		

civilian population and the unemployed is shown in Table VII.

Table VII.—Great Britain: Occupational Distribution of Working Population, 1939-46
(in thousands)

	(in thousan	ası			
ě		Mid- 1939	Mid- 1943	Mid- 1945	Mid- 1946
Military personnel	Males Females	480	4,296 461	4,653 437	1,753 120
Total	remutes	480	4,757	5,090	1,873
Civil Defense, national fire service					
and police	Males	80	253	112	84
	Females	• • • • • • •	70	15	4
Total		80	323	127	88
Civilian employed	Males Females	13,083 4,837	10,422	9,986 6,223	11,716 5,354
Total		17,920	17,121	16,209	17,070
Unemployed				•	•
Ex-service people not yet empl	Males & Females	•••••	20	40	725
Persons registered as unempl		1,270	60	103	359

During the year which ended in June 1946, 1,124,000 women and 330,000 men withdrew from the gainfully employed pop. of Great Britain.

But that figure still exceeded the July 1939 employed pop. by 365,000. There were 140,000 fewer men and 505,000 more women in the labour supply of 1946 than in that of 1939.

The larger number of men still in the armed services, in addition to those killed and physically disabled during the war, caused the shrinkage in the male employable population.

A wide range from maximum to minimum employment occurred in the decade 1937–46. The average unemployment of insured persons in 1938 was 1,168,564 persons; in 1943–44, less than 50,000.

Great Britain experienced lower unemployment after 1940 than it had experienced for many years. (Table VIII).

Canada.—The Canadian government estimated that in 1939 there were 3,370,000 persons more than 14 years of age available for gainful occupations. This number increased to 4,538,000 by

Nov. 1945, and stood at 4,525,000 in Feb. 1946. Most of the increase was in the number of females in the labour market—the figure increased from 638,000 in 1939 to 1,014,000 in Feb. 1946 (Table IX).

Though the armed forces increased from 10,000 in 1939 to 305,000 in 1941, the number of males in employment also increased by 177,000. Thereafter the numbers in civilian employment did not increase noticeably until after the war.

Table VIII.—Great Britain and Northern Ireland· Number of Insured Persons Registered as Unemployed: 1937–46 (8 mo.)

	TOTAL Great Britain & North-		orarily oped	Wholly Un-	Total: Great Britain				
	ern Ireland	Males	Females	Males	Females	or main			
1937	1,862,662 1,480,324 918,054 330,675 119,117 85,538 77,929	113,394 201,855 137,192 100,389 29,275 3,196 795 394 549	62,943 106,092 78,347 58,549 27,476 2,691 733 518 584	997,729 1,168,564 934,332 468,777 135,320 62,019 47,191 45,062 86,273	216,183 304,716 258,088 222,373 99,756 31,859 20,574 17,634 53,004	1,390,249 1,781,227 1,407,959 850,088 291,827 99,765 69,293 63,608 140,410			
946									
Jan Feb	388,050 404,401 402,555 405,802 408,290 391,939 394,647	876 880 1,076 746 579 3,165 2,860 2,870	1,152 1,295 1,286 828 710 1,419 1,309 1,894	198,221 223,147 238,351 246,382 256,988 267,238 260,895 268,109	129,205 130,256 131,203 123,454 116,599 104,345 94,270 90,848	329,454 355,578 371,916 371,410 374,876 376,167 359,334 363,721			
Compiled from tabulations in Ministry of Labour Gazette (London).									

The decrease in unemployment and increase in males available for employment provided personnel for the increase in the armed forces, 1942–45.

The index numbers of employment in manufacturing as a whole are shown in Table X, together with indices for particular industries in 1939, 1945 and 1946. Manufacturing employment expanded sharply during the war but not in proportion to the expansion in the United States.

(See also Business Review; Census Data, U.S.)

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Table X.—Canada: Index Numbers of Employment, All Industries and Major Industries, Specified Years (1926=100)

l'ear	All Mfg.	Mfg.	Log- ging	Com- muni- ca- tions	Trans- porta- tion	Con- struc- tion	Serv-	Trade	Finance
1937	120.0	• • • • •							
1938	112.1			• • • • •	• • • • •	• • • • •	• • • • •	• • • • •	
		:::::		• • • • •					
1939	11 <i>7.</i> 5	112.8	165.6	87.5	87.5	146.3	149.8	135.5	109.8
940	127.9					140.0	1 -7.0	133,3	109.8
		• • • • •	• • • • •	• • • • •	* • • • •				
1941	160.6	• • • • •							
1942	177.8							• • • • •	• • • • •
943	185.9			• • • • •	• • • • •	• • • • •			
		• • • • •							
1944	184.3								• • • • •
945	175.0	204.1	144.9	121.8		1166			
					127.8	119.3	211.3	171.4	130.0
1946	172.6	184.0	156.4	151.1	129.1	148.2	237.8	190.0	144.6
							,.0		1 -4.0

Table IX.—Canada: Estimated Distribution of Manpower on Specified Dates
(in thousands)

	1939 (Aug.)		1941 (June)		1943 (June)		1945 (Nov.)		1946 (Feb.)	
Gainfully Employed Armed Forces	Males 3,092 10 *	638 	Males 3,269 305 170	Females 752 1 91	Males 3,250 718 40	Females 985 32 25	Males 3,388 139	Females 1,150 *33	Males 3,511 179	Females 1,014 *
*Figs. not available.	, Canaar	in Labour (ozerre, Ç	inawa, Ca	nada.					

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See PACIFIC ISLANDS, U.S.

Endocrinology

By the year 1937 it was possible to divide all the known hormones into two categories, according to whether they were proteins or not. The specific or general chemical structure of the nonprotein hormones was known. Thyroxin and adrenalin had been chemically identified and synthesized. The active principles secreted by the ovary, testis and adrenal cortex were known to be steroids, close relatives of cholesterol and the bile acids. The protein hormones were in process of isolation and purification. Insulin had been crystallized and its nature as a sulphurcontaining protein had been established. The protein nature of purified extracts of the parathyroid gland and of the "factors" separated from posterior pituitary extracts was recognized, although the hormonal nature of the latter was in doubt.

The proteins in active extracts of the anterior pituitary gland had been separated by various methods and, according to the particular extractions and precipitations employed and the biological activities observed, were supposed to include anywhere from 3 to 21 separate hormones.

Chemical Nature of the Hormones.—Research during the decade after 1937 was characterized in the main by a concerted and highly successful attack on the detailed chemistry of the steroids, their derivatives and metabolites; and by the application of the newer methods of protein isolation and purification to anterior pituitary extracts.

Anterior Pituitary.—The growth, thyrotrophic, adrenotrophic, follicle-stimulating, luteinizing and lactogenic hormones were obtained in pure or very highly purified states. They were found to be distinct proteins with characteristic properties such as isoelectric points, mobilities, molecular weights, etc. They exhibited characteristic biological effects. Thus the evidence indicated the elaboration by the anterior pituitary of at least six separate protein hormones.

It seemed likely that more pure fractions would be found, or that certain activities of crude pituitary extracts would turn out to be due to joint actions of two or more of the pure hormones.

Thus the ketogenic activity of crude pituitary extracts could not be accounted for by any of the known purified pituitary proteins.

Certain evidence suggested that similarly derived fractions of the pituitary glands of different species of animals could yield the same biological activities without being identical proteins. It was shown, for example, that the pure adrenotrophic hormones obtained from sheep and hog pituitaries were chemically different. This introduced the possibility of immunologic complications even when pure protein hormones become available for use in the therapy of endocrine disorders.

Posterior Pituitary.—Although the decade 1937–46 advanced knowledge of the chemistry and pharmacology of posterior pituitary extracts, the evidence for the hormonal nature of these effects remained equivocal. The blood-pressure raising and antidiuretic principle was completely separated from the principle which acts on uterine muscle. Both of these purified fractions were found to be polypeptides, having molecular weights between 600 and 2,000. However, a protein with a molecular weight of 30,000 was also isolated from extracts of the posterior lobe. This protein was pure and possessed blood-pressure raising, antidiuretic and oxytocic activities. Moreover, it could be

fragmented to yield smaller molecules each possessing a single activity. It was not settled whether the large protein molecule represented the natural posterior lobe hormone as secreted, or whether it was merely a storage material in the gland which was fragmented before release.

Thyroid.—Despite ample previous evidence that administered thyroxin reproduced all the phenomena of thyroid overactivity, it was demonstrated that the hormone was secreted by the gland and carried in the blood as a thyroxin-diiodotyrosine-protein combination. It was also shown that the hormone was carried mostly in the alphabeta globulin fraction of the blood.

A more startling development was the discovery that proteins containing tyrosine (plasma proteins, casein, etc.) could react in vitro with iodine to form hormonally active substances. Furthermore, this in vitro iodination of proteins was shown to result in the formation of thyroxin. This was the first demonstration that a hormone could be produced in the blood and tissues generally, and indicated the possibility that a hormone may precede its gland in the evolutionary scale. However, the thyroid gland seems to justify its existence by being a much more efficient producer of thyroxin, and by being subject to physiological regulation.

Based on the above and other evidence, the concept of thyroxin synthesis at the end of the decade was that iodine ingested with the food is quickly taken up by the gland, reacts with the tyrosine of the cell proteins, and forms diiodotyrosine and thyroxin. These substances are kept in the follicles of the gland in the form of a complex with a globulin of a molecular weight up to 700,000. The hormone is released from the gland by proteolytic splitting of this huge molecule into smaller fragments which are carried with the plasma proteins.

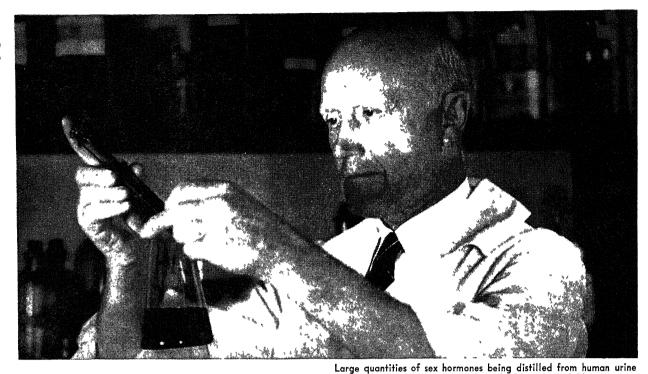
Parathyroid.—Beyond the fact that the activity of the parathyroid hormone is associated with a protein fraction, no other precise data concerning its chemistry came to light during the decade.

Adrenal Cortex.—The biologically active substances produced in the adrenal cortex had first been characterized as steroids in 1936. Later it was shown that this gland produces a series of steroid compounds, classifiable roughly into three groups. The C₁₁ steroids, possessing an O or OH group on the 11th carbon atom, were found to affect the metabolism of the foodstuffs. Desoxycorticosterone exerted the most marked influence on the excretion and distribution of sodium and potassium by the body. The third group consisted of steroids identical with or related to the hormones of the gonads.

In addition, when adrenal cortical extracts were fractionated an amorphous residue remained which was not identified at the end of the decade, but which is biologically quite active when tested by the criterion of the survival of adrenalectomized animals.

A considerable number of adrenal cortical steroids were chemically identified and synthesized, including one of the C_{11} group, which had resisted the efforts of the chemist for many years.

The Gonads.—The decade witnessed an enormous development in the chemical determination of various derivatives of the steroid hormones of the ovary and testis. The metabolic pathways followed by the sex hormones were closely studied, and certain general principles evolved. It appeared that the precursor of all steroid hormones was most probably cholesterol, which is itself built up from acetic acid. In the case of progesterone (strictly speaking



by Prof. Fred Conrad Koch of the University of Chicago

It was
sternids eniphyseal cartilage. This allows the lengthwise ex

of its excretion product, pregnandiol) this was shown conclusively by using isotopically marked substances. It was also found that many of the biologically active steroids were inactivated by the liver (by oxidation or complete destruction) or were made ready for excretion by conjugation with glucuronic acid, sulphate, etc.

It was proved that the adrenal cortex can elaborate sex active steroids, by the isolation and identification of such compounds from the gland itself, and from the urine of patients suffering from adrenal hyperfunction or tumour.

A novel departure in endocrine physiology was the demonstration that chemical compounds could be prepared which possessed estrogenic activity, and yet were not structurally related to the naturally occurring hormones. An example was stilbestrol, which came into common therapeutic use in patients requiring treatment with estrogens. Such phenomena pointed to the possibility that the criteria of chemical relationships might have to be changed or that biological specificity was not as rigid as formerly imagined.

Influence of the Endocrine Glands on Growth.—The work of Pierre Marie, Harvey Cushing and H. M. Evans had established the predominating influence of the anterior pituitary gland on growth. It was known that removal of the gland stopped further increase in body length; while the administration of pituitary extracts to hypophysectomized animals prevented the stunting which would otherwise occur and under suitable conditions, might even produce supernormal growth. During the decade 1937–46, the growth hormone was purified to the extent that no significant amounts of the other pituitary factors were present. This made it possible to study the uncomplicated action of this hormone, and to obtain a clearer view of the role of other endocrine factors in the regulation of growth.

Growth involves two main phenomena—an increase in the active protoplasmic mass and an increase in body length. The increase in protoplasmic mass depends upon the retention of nitrogen to support an increased rate of synthesis of cell proteins. The increase in body length, which occurs consequent to pituitary activity, depends upon a stimulation of cell growth and proliferation in the

epiphyseal cartilage. This allows the lengthwise expansion of the bone behind the proliferation centres. In normal animals this does not proceed indefinitely. The formation of bone overtakes the expansion of cartilage, bony fusion occurs and further growth in length ceases.

As regards nitrogen retention, it was found that the thyroid gland works synergistically with the growth hormone. This is probably due to the influence of the thyroid hormone on the energy level of the cell. The synthesis of proteins requires energy, which has to be supplied by energy-yielding reactions in the course of the degradation of other foodstuffs. Thus, an effective metabolic rate is essential for an optimal rate of protein synthesis. The testicular steroids were also shown to favour nitrogen retention, especially in skeletal muscle. However, since both thyroid hormone and testosterone have a tendency to close the epiphyses prematurely, they act as opposing influences to the growth hormone with respect to growth in length.

It was demonstrated that the adrenotrophic hormone of the pituitary, via the adrenal cortex, stimulates protein breakdown and thus opposes the influence of growth hormone on nitrogen retention. In fact, it was possible to neutralize completely the effect of growth hormone by suitable doses of the adrenotrophic factor. Insulin was shown to be essential to protein synthesis, for in its absence the administration of growth hormone resulted in an increased excretion of nitrogen rather than in nitrogen retention.

It became apparent that the growth hormone of the anterior pituitary was only one of a number of endocrine factors concerned with protein synthesis in an interrelated fashion. However, with respect to its influence on growth in bone length, the pituitary could with more justice be considered to originate the growth hormone, since it was shown to be able to exert this effect in vivo when other hormones were absent.

Regulation of Endocrine Secretion.—The general principles established prior to the decade 1937–46 were more or less confirmed and amplified. An outline of the status

of knowledge and thought in this field at the end of the decade could be classified into four categories, as follows:

- (1) The stimulating (trophic) action of various anterior pituitary hormones upon other glands (thyroid, adrenal cortex and gonads).—The mechanism by which these effects occur is considered to be specific stimulation of growth and proliferation of the secretory cells of the affected glands, which in the normal course of events results in increased production of hormone. The latter result is not a necessary event, since it was demonstrated that the pituitary causes thyroid hypertrophy even when the production of thyroxin is blocked by thiourea.
- (2) The inhibitory action of hormones of other glands on pituitary secretion.—The trophic effects of the hormone of the anterior pituitary are self-limiting because when the hormones of the other glands reach the pituitary in sufficient concentration, the pituitary is inhibited. This is part of the homeostatic machinery by which the "endocrine balance" is maintained.
- (3) Influence of metabolite concentration on endocrine secretion.—The oldest known action of this kind is the influence exerted by the level of the inorganic iodine of the blood upon the structure and function of the thyroid gland. It was also shown that a fall in blood calcium leads to overactivity of the parathyroid, that a rise in blood glucose stimulates insulin secretion, and that a fall in blood glucose leads to release of adrenalin from the adrenal medulla.
- (4) Nervous regulation of endocrine activity.—The influence exerted by the nervous system upon the endocrine glands is of two kinds. The posterior pituitary gland and the adrenal medulla are direct outgrowths of the nervous system and are continually under its direction. Interruption of nervous pathways to these glands leads not only to secretory inactivity but also to atrophy. While the other glands are not as directly ruled by the nervous system, certain functional relationships are known. For example: (a) It was shown that the thyroid gland reacts to environmental cold only if the connection between the hypothalamus and the pituitary is intact. (b) In birds, light via the retina of the eye sets up nerve impulses which affect the pituitary, and ovulation is thereby stimulated. In this way the seasonal variation in the amount of natural light can account for the characteristic reproductive cycle. (c) In certain animals, like the rabbit, ovulation occurs only when a suitable stimulus to the cervix of the uterus is transmitted via the nervous system to the pituitary. This stimulus evokes the release of luteinizing hormone from the pituitary, which in its turn influences the ovary to release an ovum. (d) Experimental stimulation of the splanchnic nerves (or the injection of adrenalin) causes a release of adrenal cortical hormones into the blood. (e) The interruption of the normal menstrual cycle by emotional stress is an old clinical observation. It was shown that such amenorrhoeas could be relieved by the administration of prostigmine, that is by parasympathetic stimulation.

It had long been known that anoxia results in a rise in the blood sugar level. This was attributed to the effect of anoxia on the nervous system, which stimulates the adrenal medulla to release adrenalin. However, a more careful analysis of this phenomenon showed that anoxia still affects the blood sugar even in the absence of the adrenal medulla, except that instead of causing a rise it causes a fall in the level. When both the adrenals and the pancreas are removed, anoxia produces no change in blood sugar level. It appeared that the sympathetic-adrenal mechanism and the vago-insulin mechanism are both stimulated by anoxia, and that the central nervous system may under

certain conditions regulate insulin as well as adrenalin secretion. There was evidence suggesting that the hypothalamic area is the important centre for neuroendocrine interrelationships.

Influence upon Sex Development.—The wealth of data on the chemistry and physiology of gonadal steroids accumulated during the decade made it possible to study the relation between these steroids and those of the adrenal cortex. It was also possible to define more precisely the actions of the gonadotrophic hormones of the pituitary.

Three gonadotrophic factors were shown to play a role in the development of the ovary, and the maintenance of the normal female sex cycle. The follicle-stimulating factor leads to growth of the primitive follicle to the stage and size which obtains just before ovulation. The luteinizing factor promotes ovulation and the beginning of the transformation to the *corpus luteum*. Prolactin or the luteotrophic factor maintains the *corpus luteum* and promotes the secretion of progesterone.

It was shown that estradiol and estrone are partly inactivated and destroyed in the liver. This occurs partly by conjugation with glycuronic acid and with sulphate, partly by transformation to a steroid of much lower potency. Menstruation follows from the withdrawal of steroid hormones, which in some way affects the spiral arteries of the uterine lining. These blood vessels break, and the result is bleeding and desquamation of tissue.

It was increasingly realized that normally spaced cycles can exist in the absence of ovulation and corpus luteum formation. It became important to develop criteria for determining the occurrence or absence of ovulation. The previously known cyclical changes in the vaginal mucosa were studied in further detail. It was also demonstrated that the accurate daily body temperature, taken under basal conditions throughout the cycle, exhibits a characteristic curve which indicates the day of ovulation by a sudden sharp rise in temperature. The simultaneous employment of the vaginal smear and body temperature techniques proved to be very helpful in the diagnosis and treatment of sterility and other disorders.

Previous clinical experience had indicated the value of thyroid hormone in the treatment of diminished sex function, such as irregular and absent menstruation, sterility, lack of sexual development, etc. These clinical findings were elucidated by animal experimentation. It was shown that thyroidectomy inhibits ovulation of mature ovarian follicles, and that the administration of thyroid releases the luteinizing hormone from the anterior pituitary and causes ovulation and the formation of corpora lutea.

It was found that in the male the follicle stimulating hormone leads to the normal development and maintenance of that portion of the testis which produces the sperm. The luteinizing factor leads to the maintenance of the interstitial or Leydig cells which produce testosterone, the male sex hormone. This steroid is partly destroyed and partly converted to androsterone and similar compounds. The adrenal cortex normally produces sex steroids, mainly of the male variety, which accounts for the masculinizing effects of tumours or hypertrophy of the adrenal cortex. The metabolic products of the male sex hormones are usually steroids with a keto group on the 17th carbon-atom of the molecule. Practical methods for the chemical determination of the 17 ketosteroids were devised, and it was established that their concentration in the urine correlated well with the rate of production of the male sex hormones.

Influence upon the Metabolism of Foodstuffs.—The

rapid development of enzyme chemistry and the knowledge of intermediary metabolism gained from it, affected the concepts concerning the action of hormones upon metabolism. It became evident, from the order of magnitude of the effective doses of the hormones, that they most probably acted by influencing the rates of reaction of key enzyme systems. Although the precise loci of action of any of the various hormones were not ascertained, the indirect knowledge gained during the decade made certain conclusions very probable. Thus, it was shown that glucose can be utilized for storage and oxidation in the complete absence of insulin. However, insulin enables both processes to proceed at more rapid rates at any given blood sugar level than occur in the absence of insulin. From this and other work it appeared that insulin increases the rate of glucose phosphorylation, which is the first step in its transformation to glycogen or in its dissimilation to carbon dioxide and water. This conclusion was also supported by evidence derived from work with radioactive phosphate.

When food was withheld from experimental animals from which the pituitary or adrenal cortical glands had been removed, there was a marked fall in the blood sugar level accompanied by a decrease in nitrogen excretion, a virtual inhibition of the breakdown of fats to ketone bodies and a reduction in the basal metabolic rate. In other words, it was demonstrated that such animals were unable to transform their stored food materials into the immediate fuel substances of the body, namely glucose and the keto acids. However, it was also shown that hypophysectomized or adrenalectomized animals can use ingested proteins as effectively and as quickly as do normal animals, although ingested fat has no advantage over stored body fat. Since proteins taken by mouth are broken down in the gastrointestinal tract to amino acids and absorbed as such, it was concluded that the pituitary and the adrenal cortex exert their influence on the initial stages of the breakdown of proteins and neutral fat and are not concerned with the transformation and use of the amino acids. This influence of the pituitary is exerted, in part at least, through the thyroid gland. For it was found that the blood sugar level and the nitrogen excretion of fasted hypophysectomized animals could be restored to normal by the administration of thyroid hormone.

The availability of the various hormones for experimental work led to the substantiation and elaboration of the concept of the "endocrine balance" in more specific terms than was previously possible. Thus the synthesis of proteins is promoted by insulin, by the growth hormone in the presence of insulin and by testosterone. (There were good grounds for the assumption that the action of insulin is due to its effect in increasing the turn-over of adenosine triphosphate, which is the probable energy donor for the formation of peptide bonds.) These anabolic influences are opposed by the thyrotrophic and the adrenotrophic hormones via thyroxin and the C11 steroids, which promote the breakdown of protein to amino acids. The production of fat from carbohydrate is promoted by insulin and opposed by the pituitary, thyroid and the adrenal cortex. Insulin leads to muscle glycogen storage, while the thyroid and the adrenal medulla favour glycogen breakdown.

From this same standpoint, experimental and clinical diabetes came to be regarded not as a pancreatic disturbance but as an upset in the endocrine balance. In the absence of insulin, the effects of the other glands become predominant, leading to excessive breakdown of storage materials and an oversupply of glucose and keto acids. This raises the level

of the latter substances in the body fluids, and eventually spills them over the kidney dam. The so-called diabetogenic effect of the anterior pituitary gland is due to the joint action of several hormones. The adrenotrophic factor stimulates the adrenal cortex, the thyrotrophic factor activates the thyroid. The growth hormone evokes a reactive stimulation of insulin secretion and upon massive and long continued administration, leads to degeneration of the insulin producing cells of the pancreas. It was not known at the end of the decade whether ketone production was governed by a separate ketogenic pituitary hormone. The endocrine balance also offers a ready explanation for the insulin sensitivity following removal of the pituitary or adrenal cortex, and for the sensitivity of the depancreatized animal to the C11 adrenal steroids and the metabolic factors of the anterior pituitary.

Mineral Metabolism.-Brief mention was made previously of the influence of desoxycorticosterone, one of the adrenal hormones, on the metabolism of sodium and potassium. The manner of its action was elucidated to some extent by following the time sequence of the redistribution of sodium and potassium in the blood and tissues of animals treated with this hormone, and of animals from which both adrenal glands had been removed. From these observations it was concluded that the adrenal cortex affects the kidney tubules and promotes their ability to reabsorb sodium, and thus conserve it. The changes noted in the body fluids and tissues appeared to be secondary to the kidney mechanism. Steroids other than desoxycorticosterone, and not derived from the adrenal cortex were shown to exert similar, though less marked, sodium retention effects. Among these were estradiol, testosterone, progesterone and pregnandiol.

Of the other mineral substances in the body, calcium and phosphate were shown to be hormonally regulated. The mechanism of action of the parathyroid gland in mobilizing calcium from bone was not completely clarified. However, it was shown that the effect could still be obtained in the absence of both kidneys. Therefore, the increased calcium excretion is not the primary effect of the hormone. The blood calcium raising effect of the estrogenic hormones, demonstrated especially in birds, was invoked to explain certain types of osteoporosis occurring in women suffering from a deficiency of these hormones after the menopause. However, no explanation of the mechanism of these effects was brought forward.

It had been known that insulin administration lowers the level of inorganic phosphate in the blood and diminishes the urinary excretion of phosphate. This was shown to be due to the promotion by insulin of the esterification of the blood inorganic phosphate to some compound which was still unknown at the end of the decade.

Nutrition and Glandular Activity.—It might be expected that general or specific nutritional deficiencies would affect the endocrine glands as they do all the other tissues of the body. However, certain specific relationships were uncovered between nutritional disturbances and particular glands. Thus, it was found that early in the course of B-complex deficiency there occurs a lack of the gonadotrophic hormones, which leads to disturbances in the sex cycle. The adrenal cortex is injured in pantothenic acid deficiency; and the spermatogenic apparatus of the testis suffers when there is a lack of vitamin E or of the amino acid, arginine.

The syndrome of anorexia nervosa begins with a loss of appetite due to a severe emotional disturbance. It was shown that as the disorder progresses, symptoms and signs of pituitary hypofunction appear. A stage is finally reached

which is indistinguishable from the disease picture which follows destruction of the pituitary gland. In other words, in anorexia nervosa a lack of nutritional elements leads to the same loss of pituitary function as can be caused by tumour, haemorrhage or infection.

Animal experiments and clinical observations revealed that thyroid hyperactivity may cause nutritional deficiencies, with consequences previously ascribed to the direct action of the thyroid hormone. Thus it was shown that the marked muscular weakness, the low liver glycogen and the prolongation of the sex cycle seen in hyperthyroid states, could be prevented by the administration of large amounts of the vitamin D complex. Vitamin D was found to prevent the negative calcium balance which follows thyroid administration. Apparently, these secondary vitamin deficiencies are due to the increased rate of excretion and destruction of supplementary substances, because of the rise in general body metabolism. What is adequate for the normal organism becomes inadequate for the hyperthyroid individual.

Specific Inhibitors of Glandular Activity.-Three separate and seemingly unrelated observations made within a short time of each other led to the discovery of a series of substances which inhibit the formation of thyroxin by the thyroid gland. It was first shown that rabbits fed rapeseed developed goitres. This was found to be due to the allylthiourea contained in that feed. Phenylthiourea administration to rats also led to thyroid enlargement. The same effect was obtained from the chronic feeding of some of the sulfa drugs. It was then demonstrated that all these substances interfere with the formation of diodotyrosine from tyrosine and iodide. This results in a lack of the thyroid hormone, leading to the development of hypothyroidism. As the level of the thyroid hormone decreases, the pituitary is stimulated to increase its output of the thyrotrophic factor. This results in the production of hyperplastic goitres which, however, do not secrete any thyroid hormone. These findings were applied clinically in the treatment of hyperthyroidism. The substances used in human therapy were thiouracil or one of its derivatives. But such treatment remained largely experimental in nature, because of a certain percentage of toxic effects.

An isolated observation in 1937 showed that alloxan produced hypoglycaemia in rabbits. Six years later this observation was confirmed; but it was also shown that, when such animals survived the hypoglycaemic attacks, they went on to develop a permanent diabetes. It was found that this was due to the specific effect of alloxan upon the beta cells of the pancreas. The first effect of the drug is to release the insulin present in the pancreas, then the cells degenerate and are eventually replaced by fibrous tissue. Alloxan, therefore, became a very useful tool for the study of diabetes in such animal species in which it is difficult to perform a pancreatectomy, either because the animal is very small or because its pancreas is dispersed over the mesentery. The use of alloxan gave promise also of leading to an analysis of the separate functions of the alpha and beta cells of the island of Langerhans, since the alpha variety is not affected by alloxan.

Clinical Applications.—Parallel with the development of the theoretical side of the subject, the decade 1937–46 witnessed some growth in the clinical aspects of endocrinology in regard to diagnosis and therapy.

Because methods for the quantitative chemical determination of proteins had not been developed, the estimation of the blood and urine levels of the pituitary protein hormones perforce remained a bio-assay procedure. The usefulness of biological assays was limited by their consid-

erable degree of variability. Nevertheless, much valuable clinical information was obtained from the estimation of the gonadotrophic factors in blood and urine. A large amount of data was available concerning the behaviour of these hormones during the normal menstrual cycle, in pregnancy and its disorders and in gonadal deficiency of both sexes.

Extensive work was done elucidating the significance of the various iodine fractions of the blood. It was demonstrated that blood iodine exists in three forms—inorganic iodide and two separable fractions of protein-bound iodine. Further research revealed that the level of protein-bound iodine varies directly with the height of thyroid function. Thus, protein-bound iodine probably represents the amount of circulating thyroid hormone and, as such, is a more direct index of the activity of the thyroid gland than had previously been available.

Adrenal cortical activity was measured by determining the protective effects of the urine of patients against the lethal action of cold in adrenal ectomized animals. This protection is a function of the concentration of the C_{11} steroids.

The androgenic steroids were measured by a colorimetric procedure, which determines those hormones from the adrenal cortex and the gonads, which have a keto group on carbon atom No. 17.

The female sex hormones were assayed both chemically and biologically. It was demonstrated that their excretion gradually rises during normal pregnancy, and exhibits a sudden sharp fall shortly before labour. It was also found that in abnormalities of pregnancy, such as abortion and toxaemias, the level of steroid hormones of blood and urine falls sometime before the onset of symptoms. About 10% to 20% of secreted or administered progesterone is changed to pregnandiol and excreted in that form. The first methods for the estimation of the latter were difficult and time consuming. A simple colorimetric procedure was then devised, making it possible to follow pregnandiol excretion (and hence progesterone production) very closely. It was shown that the presence of pregnandiol in the urine of women after a missed menstrual period signifies pregnancy.

This test, therefore, might be used to replace the biological tests for pregnancy.

The field of endocrine therapy was enlarged during the decade by the synthesis of desoxycorticosterone and of orally active preparations of male and female sex hormones. Clinical use of pituitary preparations continued to be unsatisfactory chiefly because it was not possible to make them sufficiently potent or sufficiently pure. (See also BIOCHEMISTRY; CHEMISTRY; CHEMOTHERAPY; DIETETICS; PHYSIOLOGY; ZOOLOGY.)

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(RA. L.; S. So.)

England

See GREAT BRITAIN AND NORTHERN IRELAND, UNITED KINGDOM OF.

236 English Literature

Few periods in the history of English literature had seen so much change, experiment and counterexperiment as the first four decades of the 20th century, and, viewed from a certain distance, it would appear that the pace of this movement increased during the years between the end of World War I and the end of World War II. It was too soon in 1946 to say whether the manifold activity was evidence only of a restlessness in the creative intelligence induced by the instability, the danger and the increasing complexity of civilized life during the period or was inspired by a general rise in vitality caused rather by the spread of popular education and the gradual raising of standards in cultural diffusion which were so particularly marked in the years 1937-46; but no one could deny that one of the dominant problems for the writers of those years was the interaction of public events and the artistic impulse, the degree to which they should allow their work not merely to be coloured by the political, social and international turmoil surrounding them but even to enter the service of opposing factions and ideologies at a time when the basic fabric of civilized life seemed to be in question.

Viewed from this aspect, the striking feature of English literature between 1937 and 1946 was the way in which writers managed to maintain the traditional responsibilities and liberties of intellectual and imaginative expression without losing a contemporary awareness or, in the moments of deepest crisis, a national solidarity. This was all the more remarkable during an epoch when in many other countries the stress of external events led to the political regimentation of writers, or in some cases to their willing acceptance of the role of propagandists and in others to the definite dissociation, in the vision of poet or novelist, of the individual from the claims of his time and place.

Notable also was the fact that, in comparison with the period between 1914 and 1919, these years, six of which were for the nation as a whole war years and the remainder years in which the more adventurous or unfortunate could find death in armed conflict in one part of the world or another, were responsible for many fewer casualties among the writers. John Cornford and Julian Bell, both poets of promise, were killed in the Spanish war; Robert Byron, a scholar and author of some individual travel books, was drowned on active service; Alun Lewis and Sidney Keyes, two young poets of whom much was expected, also met their deaths on active service for their country; but there were very few others of outstanding gifts among the English poets who lost their lives, and none among the novelists. Virginia Woolf, the most original woman novelist of her generation, died in 1941; but her death could in no way be ascribed to the accidents of war; nor could those of two other novelists, Hugh Walpole and L. H. Myers, and two poets, W. H. Davies and Robert Nichols. Two Irish men of letters must be added to this record of loss: the great poet and dramatist W. B. Yeats, who died a few months before war broke out, and James Joyce, perhaps the most widely discussed and influential novelist of his generation, who died in neutral Switzerland in the middle of hostilities; the Englishman H. G. Wells, who had probably made a deeper mark on the thought of the times than any other single writer, died after long illness in 1946.

The Poets.—The most notable achievements in poetry during those ten years from the older generation of writers who had already made their name in the 1920s were, after the death of W. B. Yeats, those by T. S. Eliot and Edith

Sitwell. Work of high distinction was also published by Walter de la Mare, Lawrence Binyon, Robert Graves, Edmund Blunden, Edwin Muir and Robert Nichols; and a collected edition of W. H. Davies' poems appeared after his death, in 1942. Among the generation of writers who had come into prominence in the early 1930s, the work of W. H. Auden, Cecil Day Lewis, Louis MacNeice, Stephen Spender, Ronald Bottrall and Dylan Thomas still held the limelight, though Auden left his native shores early in 1939 to become a U.S. citizen and the other four were occupied during a great part of the war with various official or semiofficial duties. Collections of poems which also attracted much attention came from George Barker, David Gascoyne, John Betjeman, William Empson, Kathleen Raine and Roy Campbell, each with a distinct and individual talent owing little or nothing to popular modes.

New names were legion, and at one period during the war it seemed as if almost any young man or woman who could put a few rhyming (or unrhyming) lines together could gain a hearing. This "boom" did not last long, however, and only a handful of them survived the critics' and the public's second thoughts. Those who appeared most promising, apart from the two poets killed in the war, Alun Lewis and Sidney Keyes, included W. R. Rodgers, F. T. Prince, Laurie Lee, Henry Reed, Terence Tiller, Norman Nicholson, Peter Yates, Lawrence Durrell, Alex Comfort and Roy Fuller-the last-named being the only one among them whose work could be strictly considered as war poetry. Mention should also be made of a group of poets, more interesting for their intention and direction than for their actual achievement, who called themselves "the Apocalypse" and turned sharply away from the political and social preoccupations that had, for a time at least, been a marked characteristic of the poets of Auden's generation. The most forcible talent among these was that of Henry Treece. Finally, no record of the memorable poetry of the time would be complete without the name of Demetrios Capetanakis, a young Greek who travelled to England just before World War II and wrote a number of unusually remarkable poems in English before his death in 1944.

T. S. Eliot had won for himself a reputation as one of England's most original and influential poets in the early '20s with The Waste Land. His poems and critical essays during the '20s and '30s consolidated that reputation and established him as a writer of powerful intelligence who was concerned, whether he wrote in verse or prose, with exploring and elucidating the central significance of western civilization and the position of modern man in relation to that historical tradition and in relation to God. His major poetical work during the decade 1937-46, Four Quartets, recorded an important further advance in this philosophical quest and an impressive development of his poetical powers. Four Quartets is a sustained meditation on the meaning of time in men's lives and its relation to eternity. It is a work of the most elaborate yet harmonious structure, full of subtle thought illuminated by imagery of great beauty and force. Eliot's theme may be stated as the belief that the ordinary time of life, the "time of chronometers," is of only illusory significance compared with the irruption of eternity into experience, and that the highest calling that man can have, the aim of both mystic and artist, is to train himself to be aware of these points of "intersection of the timeless with time." No other poet of those years could bring, as Eliot brought in Four Quartets, such a sense of the past and its accumulated intellectual and imaginative experience to bear upon the present.

Edith Sitwell was also well known for her poetry before 1937, but though it had been always highly original and

striking, her art made a leap so sudden and so remarkable at the outbreak of war that it was difficult at first sight to see the connecting links between the earlier and later phases, though they were undoubtedly there, especially when the early poems were viewed as training for the later poems in technique and the daring association of symbols. It was in Gold Coast Customs, published some years before the outbreak of war, that the signs of imminent change could be traced. The world outside the enchanted garden of her early poems had broken in, with all its pains and struggles, and produced a long work of almost savage force, the rhythms as insistent as tom-toms, in which a fanciful description of native African customs is the cloak for a passionate satire on the heartless world of the powerful who exploit the powerless. Edith Sitwell's agonized apprehension of human misery, which beats so strongly under this poem, grew even stronger and more fruitful artistically when the barbarities of international war were let loose. The result was two books of poems, Street Songs and Green Song, which displayed a new and completely assured "grand manner," where the poet whose work had previously been the delight of the limited circle who could appreciate her special wit and fantasy became a voice for all the bewilderment and suffering of a ruined generation. The outstanding quality of this later poetry of Edith Sitwell's was the noble compassion that informed its utterance and controlled its music, and next to that the skill with which she assembled the symbols, creating in the framework of a single poem, which might not be more than 100 lines in length, the sense of space in the universe reaching to the farthest stars and time reaching back through the earlier epochs of Christian civilization to the classical world and beyond that to the very dawn of life. Street Songs and Green Song must be counted as an unique act of courage and faith in the face of the powers of destruction that raged with such violence while the poems were being written.

When viewing the work of the poets of the middle generation as a whole, one could not fail to be struck by the consistency of the intellectual evolution through which most of them went. At the time of the Spanish Civil War the sympathies of Auden, Day Lewis, Spender, MacNeice and their fellow poets, openly declared in their poetry, were with the Spanish republicans and the world-wide antifascist movement. They believed that the social, political and international disorders which they saw around them could be remedied by political action, in fact by revolutionary political action. By 1940, however, a certain disillusionment with the outcome of the Spanish war and the behaviour of the revolutionary parties of the left, together with a growing feeling that the will to resistance against fascist Germany cut right across class differences in Britain, led to a revulsion from the kind of poetry that the French had called "engaged." The sense of indignation and pity before injustice and human suffering, however, remained, and it was noteworthy that throughout World War II it was this human standpoint that was dominant and that nowhere in the work of poets of any distinction did a note of national bombast or partisan hatred creep in. Even under the bombs it was the tragic situation of humanity as a whole that preoccupied these poets, and the value of the life of the spirit before the challenge of terror and death.

This note was also characteristic of the majority of the poets, roughly between the ages of 20 and 30, who actually served in the armed forces and were posted abroad with the army, navy or air force. Outstanding among these were Alun Lewis, Sidney Keyes and Roy Fuller. All three were of left-wing political outlook and had therefore ideological

as well as patriotic reasons for fighting; nevertheless, neither the invective of hatred nor appeals to honour and glory found any place in their works; instead, there was above all a sense of the catastrophe to civilization that the war had precipitated and of the tragic situation of men of good will in the midst of it and an especially poignant feeling of sadness in the loss of what youth has a right to enjoy, love first and foremost, and the promise that love holds out of its growth in the peaceful rhythm of life. The poetry written by English poets during World War I was essentially a poetry of trench warfare and the ruined, mud-sodden landscapes of the western front. In the more complex and totally organized war of 1939-45, the poetry written by young men serving in the forces was deeply affected by many different forms and places of action: the impact of India on Alun Lewis was as marked as that of East Africa on Roy Fuller, and some of Sidney Keyes's finest work prefigured the desert where he eventually met his death. Keyes was by many years the youngest of the three and showed a feeling for music, rhythm and texture in his verse that was truly astonishing in a poet at the beginning of his career. In maturity of thought and the power of communicating direct feeling, both Lewis and Fuller were his superiors, but neither had quite his remarkable virtuosity; both in fact gave the impression that prose might eventually turn out to be their preferred medium. The stories that Alun Lewis wrote toward the end of his life showed a rapidly developing talent, and one story, Ward 'O'3 (b), was among the dozen or so best stories of the war published before the end of 1946.

The 'gos saw a number of interesting experiments in poetic and partly poetic drama; of the most outstanding achievements in this form, the first place must undoubtedly be given to The Family Reunion by T. S. Eliot, a brilliant essay in the combination of the atmosphere of Greek classical drama with a modern scene and situation, and in the writing of verse that could move without awkwardness from colloquial simplicity to the heights of dramatic and imaginative tension. The collaboration of W. H. Auden with Christopher Isherwood which had been responsible for several plays in the early '30s produced two more between 1936 and 1939, in a genre which was a mixture of charade, masque and expressionist drama: The Ascent of F6 and On the Frontier. Stephen Spender's Trial of a Judge had more poetic intensity than either, though the lighter element was altogether lacking in a sombre study of the dilemma of the liberal conscience in a totalitarian age. Several poetic dramas were written during World War II, including The Assassin by Peter Yates, The Old Man of the Mountains by Norman Nicholson and This Way to the Tomb by Ronald Duncan. Mention should also be made of two plays in verse written for radio production and subsequently published in book form: The Rescue by Edward Sackville-West and Christopher Columbus by Louis MacNeice.

Fiction.—The latter end of the decade 1937–46 appeared barren when fiction is considered. Virginia Woolf, James Joyce, Hugh Walpole and L. H. Myers were all dead before World War II had ended; Aldous Huxley had been so long in the United States that he scarcely seemed to belong any longer to the literary world in the country that had been thrown so largely on its own resources during the years of siege; and he and his younger contemporary Christopher Isherwood, who had left for the United States in 1939 with W. H. Auden, appeared to be more concerned with the problems of mystic religion than-those-of

238 the craft of fiction—a preoccupation that also touched one of the most successful and established of English story writers, Somerset Maugham, in the same transatlantic climate. Only E. M. Forster was left of the "old guard," but the silence which he had preserved as a novelist ever since the publication of A Passage to India in 1924 continued unbroken even by short stories ("The Eternal Moment" appeared in 1928).

A younger generation held the field, with the popular J. B. Priestley a little apart, older than most of them and devoted perhaps as much to the drama as to the novel. An interesting fact about two of the most prominent among them, Evelyn Waugh and Graham Greene, was that both allowed their adopted religion, Roman Catholicism, distinctly to colour their work but still maintained their hold on the public in a predominantly Protestant country. Among the women novelists, three in particular should be mentioned for highly-wrought craftsmanship and the steady development of their gifts: Elizabeth Bowen, Ivy Compton Burnett and Rosamond Lehmann. Among the rest who were already known before 1937, a small number strikingly increased and consolidated their reputations, including Henry Green and Rex Warner. The same must also be said of V. S. Pritchett, although his chief medium during these years was the short story, and much of his time was devoted to critical writing, in which he displayed an extraordinarily wide reading and an unfailing zest and percipience of approach. A. J. Cronin, Storm Jameson, Robert Graves, Joyce Carey, F. L. Green, Walter Allen and

James Joyce's last published work, Finnegans Wake, appeared in 1939, two years before his death in Zurich, Switzerland. The Irish-born writer is shown here with his grandson



L. P. Hartley all produced notable work in the novel; Frank O'Connor, T. O. Beachcroft and James Stern in the short story; but new names were rare, and few of them attracted more than passing attention, the most promising including Nigel Balchin, Richard Llewellyn, Philip Toynbee, P. H. Newby, William Sansom, Mary Lavin and Denton Welch. This brief list does not include writers whose theme directly and predominantly was the war itself. Among the latter, C. S. Forester, Nevil Shute, H. E. Bates, Anthony Thorne and John Sommerfield were all known as writers of fiction before the war, but Gerald Kersh and Iulian Maclaren Ross made their first distinct mark with their novels and stories of the soldiers of the new English

Many other young men in the services wrote notable single novels or stories but laid no certain claim to be considered literary artists with a future.

James Joyce completed the second great novel of his life, Finnegans Wake, before war broke out. He was dead a few years later, and it stood as the testament of one of the most astonishing intellects of the age, a work of a brilliance, a complexity and sustained artistry that no other writer of his time could hope to rival. It was at the same time of such abstruseness of argument and difficulty of language that it was likely to remain one of the least read masterpieces ever written; but of the underlying seriousness of purpose, of the immense care, erudition and sense of the evocative possibilities of words that had gone to its making no one could doubt who had taken the trouble to examine its structure and open his sympathies to its mysterious power, or who had heard the records of certain passages recited by the author himself. As Ulysses was the presentation of the actions, thoughts and feelings of a Dubliner, his family, friends and associates during a single summer's day, so Finnegans Wake was the complementary presentation of another Dubliner's dreams and half-dreaming fantasies, memories and sensations in the course of a single night's rest. It was of immense length and took the author 17 years to work into a shape that satisfied him, in which his sleeping publican should become a symbol of the whole subliminal existence of humanity.

Virginia Woolf completed two of her most remarkable works between 1936 and her death in 1941: Roger Fry: A Biography and Between the Acts. In addition, two collections published after her death and during the war, one of essays under the title of The Death of the Moth and one of short stories and sketches under the title of The Haunted House, must rank among the most notable expressions of her genius. In Roger Fry she was writing the biography of a distinguished exponent and critic of another art and a personal friend, and she accomplished this difficult task with an admirable blend of objectivity and sympathy, allowing the subject as far as possible to tell his own story through letters and journals. Between the Acts was completed, though neither was finally revised nor published, scarcely more than a few days before her death. It mattered little that it was never given its last polishing and that rough corners still stuck out of it; and though the time and place of this novel were precise-the southern English countryside and the late summer of 1939-its message was likely to be as fresh 50 years later as when it was written. It is impossible to analyze all its symbolism in a short space; but in this vision and parable of English history which is at the same time something more universal, Virginia Woolf seemed to suggest that even the terrifying events of that moment, symbolized by the bombers which suddenly roar overhead and drown the speakers in the pageant, fit into a single and ancient pattern of life. The



Virginia Woolf's distinction in English literature derived from her critical writing as well as from her widely-read novels. She died in 1941

Haunted House consisted of 6 prose pieces, among the earliest she wrote in the style she afterward developed into the audacious and beautiful effects of To the Lighthouse and Mrs. Dalloway and originally published in Monday or Tuesday 20 years before, 6 others which appeared in various periodicals during her lifetime and 6 which were found among her papers after her death. These short pieces are miniature illustrations of Virginia Woolf's imaginative method and her power of penetrating to the depths of spiritual life below the surface appearances of society. Virginia Woolf's influence on the writing of a younger generation was considerable; but she was only one of many, most of them pulling in very different directions. For some young writers E. M. Forster was the master to be followed; for others Ernest Hemingway and the U.S. school of realists; others again found their chief inspiration in European authors. Nevertheless, in spite of the variety of methods and aims that grew from these various allegiances, it was possible to discern in the fiction of the period a spirit of the age in formulation, though in two rather distinct directions. The one direction was toward a special kind of comedy, which in nine cases out of ten had a bitter aftertaste, a sudden twist toward tragedy or a satiric condemnation so sharp that the smile died away on one's lips. Dialogue was the characteristic instrument by which these writers gave the narrative its pace and accent and developed character. The novels and stories of Christopher

Isherwood, with their setting in prewar Germany, in which a deep sadness could always be detected just below the laughter; the stories of V. S. Pritchett with their so frequent undertones of irony and tragedy and the satiric extravagances of Evelyn Waugh toward the end of which a grim-mouthed Savonarola seemed to emerge from behind the entertainer's mask-these were the prototypes from which the writers of a new generation that began to make its mark during the war learned their manner. No truly gifted writer can be confined within a class or a school, and Henry Green, with the rich poetic vein that added a fascinating complexity to his work, least of all; and yet the novels he wrote during the war, with their inimitably skilful use of dialogue, were clearly in this genre. If one compared these comedies and tragicomedies with the early novels of Aldous Huxley, the dazzling entertainments of a previous decade, one could see that the change was not merely in the tempo of the narrative and the use of dialogue, but also in the introduction of characters from new social levels. Some of Isherwood's most vividly created characters are from Berlin's working classes, Pritchett's from the shopkeeping lower middle classes; while in Henry Green's Loving the majority of the characters are domestic servants. Again, in nearly all his novels Graham Greene, essentially a tragic writer though also a master of narrative speed and quickfire dialogue, maintained a preference for the classless outcast on the seedy fringes of society as chief character.

The other trend was antirealistic, toward allegory and symbolism, and one may hazard the guess that the most powerful single influence in this trend was Franz Kafka, a Czechoslovak who wrote in German. In the works of Rex Warner, a contemporary and literary associate of Isherwood, Auden and Day Lewis, traces of the Kafka-esque imaginative approach abound; and yet such novels as The Wild Goose Chase and The Professor owed as much to John Bunyan and Daniel Defoe, perhaps also to Robert Louis Stevenson and Samuel Butler; and in the making of his most remarkable achievement, The Aerodrome, completed at the beginning of the war, the fantastic imaginative projections of H. G. Wells played their part. More deeply marked by Kafka's fantasy was the work of William Sansom, whose weird stories hovering between dream and reality showed an original intellect and undeniable imaginative force. The Aerodrome was a cautionary tale for the times: a warning that the individual human soul is more complex and more precious in its complexity than any Utopia ever planned for it, and that the most fanatical seekers after perfection are likely to end up as the most inhuman and reckless tyrants. This theme was implicit also in Graham Greene's masterpiece The Power and the Glory; indeed, it was a theme which, in one form or another, reappeared perhaps more frequently than any other in the work of the middle generation of writers in Britain in the latter part of the decade 1937-46.

Miscellaneous Writers.—An aspect of the decade not without its significance was the number of writers who achieved or maintained prominence without being easily classifiable as poets, novelists, essayists, critics or historians of their age. Outstanding among these men of varied gifts were Sir Osbert Sitwell, Sir Max Beerbohm, Siegfried Sassoon, Logan Pearsall Smith (who died in 1946), Harold Nicolson, Charles Morgan, Arthur Koestler, Herbert Read, William Plomer, A. L. Rowse and Ivor Brown. In addition to them, it was interesting to observe that the editors of the three literary periodicals which published a large

part of the vital work coming from the new talents were themselves authors in diverse ways. Cyril Connolly, editor of Horizon, a monthly which began its life early in the war, was not only a critic of original gifts and style but also translated several works from the French and wrote, under the pseudonym "Palinurus," a book of meditations and apophthegms which he described as a "word cycle" and gave the name of The Unquiet Grave; Peter Quennell, editor of the revived Cornhill, who had to his credit a distinguished book of poems, a novel and a volume of remarkable literary essays, continued during the years 1937-46 his polished studies in biography with Byron in Italy, Queen Caroline and Eighteenth Century Portraits; and John Lehmann, editor of New Writing, published a travel book about the Danube, a novel, a study of modern literature in Europe and two small collections of poems.

Osbert Sitwell was one of the most versatile writers of the period; and the list of his works included novels, volumes of poems, short stories, travel essays, plays and criticism. In all of them he had his distinct contribution to make, but in the judgment of his contemporaries it was not until he began his long autobiographical work, Left Hand Right Hand, that he found the ideal medium and at a time when he was at the height of his powers. The first volume was published in 1945, and the second, The Scarlet Tree, in 1946. Several other volumes were promised, and the work was likely to be the longest he ever attempted and at the same time one of the longest autobiographical achievements of the period. It could not, however, be considered merely as a story of its gifted author's life; it was also a brilliant re-creation of a vanished social world in the process of its dissolution, and a study of all the most notable artistic manifestations of Edwardian and Georgian England. The early chapters of the first volume were devoted to an exploration of the Sitwell ancestry, back as far as great-great-grandparents on both sides of the family: they were full of witty anecdote and neat period sketches, but the author's gifts did not reach their most satisfying scope until he and his brother Sacheverell and his sister Edith appear on the scene. Then, in his description of the ancient family home of Renishaw Hall and the effect on a child's imagination of its battlemented magnificence, its vast prospect of ornamental terraces and parkland; in his portrait of his father, eccentric, kindly, but ever increasingly absorbed in his favourite pastimes of landscape gardening and mediaeval research. in his humorous and affectionate description of the family servants; and in his account of Scarborough holidays and Scarborough society at a time when it was still a fashionable watering place that nevertheless retained a strong, unspoilt, native flavour; in all these things the author showed that he was a craftsman whose skill with words had steadily grown and whose qualities of mind had steadily matured. The Scarlet Tree developed the portrait of Sir George Sitwell, described the miseries of school life for a sensitive boy of artistic leanings and above all introduced Italy and made clear the tremendous effect that Mediterranean civilization and Mediterranean landscape was to have on his awakening sensibilities.

Arthur Koestler, although a Hungarian by birth, was one of the most original and stimulating writers in the English language who came into prominence during the decade. His gifts were not primarily creative, though it was chiefly by novels that he made his name, in particular with Darkness at Noon and Arrival and Departure, the first a story of the downfall and spiritual self-catechism of a commissar

in a country where revolutionary Marxianism had triumphed and the second of the hell on earth created by Hitler for the Jews who came within his grasp during World War II. Koestler's characters are apt to be more types and mouthpieces for his own views than living people, and the books derive their power from the passionate feeling underlying them and the intellectual subtlety with which the theme is developed. His book of essays and critical studies, The Yogi and the Commissar, therefore, provided the best key to his mind. It consists of essays collected from various periodicals, some on topical political questions, with a final section in which the author subjected the progress of socialism in Russia to a rigorous examination, testing the "myth," i.e., what enthusiasts outside Russia thought of it, against the "reality," i.e., the judgment to which an honest appraisal of statistics and political acts in the home and international fields should lead a dispassionate enquirer. The dominant theme, throughout this section as in the rest of the book, is that suggested by the title: that civilization showed an increasing split between two intellectual types, the "commissar" who believed that human society could be perfected and human life freed from all its ills by change from outside, by man's increasing control of his material environment, and the "yogi," who took the opposite view, believing that no good could come from wars or revolution or any ameliorative political action until man had suffered a change of heart, a change from within. Arthur Koestler's mind showed great analytical power and painful personal experience-he himself passed through a period of active revolutionary Marxianism which made him at the same time distrustful of all optimistic theories and programs and intensely alive to the human reality behind laboratory statistics. One might be uneasily aware that strong currents of emotion led Koestler again and again to overstate his case, but one could not fail to be disturbed and stimulated by his caustic wit and ruthless dialectic.

Historical and Literary Biography, Criticism and Scholarship.-Apart from those authors and works already mentioned, distinguished contributions were made in historical and literary biography by Winston Churchill with his Marlborough (finished in 1938), C. V. Wedgwood with William the Silent, Prof. J. E. Neale with Queen Elizabeth, Field-Marshal Lord Archibald Wavell with Allenby, Duff Cooper with David, Adm. W. M. James with his biography of Adm. Lord John Fisher, V. Sackville-West with her study of St. Theresa, The Eagle and the Dove, Aldous Huxley with Grey Eminence, Lord David Cecil with The Young Melbourne, Bishop David Matthews with Acton: The Formative Years, Prof. Reginald Coupland with East Africa and Its Invaders and Livingstone's Last Journey, Edmund Blunden with Shelley, Enid Starkie with Arthur Rimbaud, Hugh I'Anson Fausset with Walt Whitman, Joseph Hone with his Life of W. B. Yeats, Hesketh Pearson with his lives of Bernard Shaw, Conan Doyle and Oscar Wilde, Derrick Leon with his studies of Proust and Tolstoi, Derek Hudson with his biography of Thomas Barnes of the London Times and L. A. G. Strong with his study of the poet Thomas Moore, The Minstrel Boy.

Of more general historical studies, undoubtedly the most timely, brilliant and popular was G. M. Trevelyan's English Social History, but in the closely allied field of historical and political philosophy The New Leviathan by Prof. R. G. Collingwood (who died in 1943) was of major importance. Among other notable works mention must also be made of J. M. Thompson's The French Revolution, Prof. F. M. Stenton's Anglo-Saxon England, Prof. W. K. Hancock's Survey of British Commonwealth Affairs',

Prof. Basil William's Carteret and Newcastle, Dr. G. P. Gooch's Courts and Cabinets, J. A. Williamson's The Ocean in English History, Arthur Bryant's inspired studies of England during the Napoleonic struggles and his biography of Samuel Pepys at the admiralty and Rebecca West's study of Yugoslavia, more romantic but a unique intellectual and stylistic tour de force, Black Lamb and Grey Falcon.

Among other works of literary history and criticism, in which the period-in view of the great proportion of it occupied by the war-was particularly rich, outstanding were Lord David Cecil's Hardy the Novelist, Dr. C. M. Bowra's Heritage of Symbolism, William Gaunt's The Pre-Raphaelite Tragedy and The Aesthetic Adventure, Raymond Mortimer's Channel Packet, George Orwell's Critical Essays, A Critical History of English Poetry by Sir Herbert Grierson and J. C. Smith and the latter's admirable monograph on Wordsworth. Mention has already been made of the literary criticism of V. S. Pritchett, whose two collections of essays In My Good Books and The Living Novel deserved to be ranked with the best of the above. Books about Shakespeare were, as usual, legion, but outstanding were John Dover Wilson's The Fortunes of Falstaff, Prof. E. M. W. Tillyard's The Elizabethan World Picture and Shakespeare's History Plays, The Voyage to Illyria by Kenneth Muir and Sean O'Loughlin, John Palmer's Shakespeare's Comic Characters and a further volume in Dr. Harley Granville-Barker's Prefaces to Shakespeare, Othello.

Winston Churchill's biography of Marlborough was a massive and colourful tribute to a great ancestor by one of the few outstanding political figures of the day who had the true gifts of a writer and not merely the capacity to turn on words as one turns on a tap. It was scarcely finished when the author was called back to the world of affairs, and during the years between 1940 and 1945 all Churchill's skill with words and gifts of style went into the speeches with which he roused the British empire and the free world to destroy the tyranny which threatened them. These speeches, most of which were published by the end of 1946, were not only precious historical documents but also remarkable examples of oratorical literature that could challenge comparison with anything in British history. Much, of course, is lost when they are read in cold print, because the delivery was so unique and the personality of the speaker so powerful. Nevertheless, in reading one can still find many of the qualities that stirred and delighted the world audience that first heard them: the bluntness of utterance, the straightforward clarity of exposition, the avoidance of anything platitudinous or woolly in thought, the continual coining of witty and arresting phrases, the deliberate touch of archaism in the idiom and the careful logic in the building of a sentence or a paragraph; above all, the sound reasonableness.

The gulf which opened in the 19th century between what might be called the documentary and picturesque sides of historical writing was gradually bridged by a notable company of historians in the second quarter of the 20th century. Striking examples in the years 1937-46 were Prof. J. E. Neale's Queen Elizabeth, A. L. Rowse's Tudor Cornwall and Miss C. V. Wedgwood's William the Silent. The last-named work in particular gained the unstinted admiration not only of the learned who expect mastery of an ever-increasing mass of raw material, but also of the general public who look for imagination and human interest. One of the most talented of England's younger historians, the author already had an excellent biography of Oliver Cromwell and a detailed study of The Thirty Years' War to her credit. These works, and a number of

shorter essays included in a volume entitled *Velvet Studies*, showed that Miss Wedgwood had not only done thorough research in the history of the 16th and 17th centuries, but also had an artist's approach to her subject and an European outlook.

Far and away the most remarkable and popular historical work of the period was G. M. Trevelyan's English Social History, covering the period between Geoffrey Chaucer and the end of Queen Victoria's reign. The author explained in his introduction that it was only part of the book he had originally intended writing, but that as the war had to some extent interfered with his work, he had decided to publish it as far as he had written it. Trevelyan was always one of the most readable of historians, but English Social History surpassed all his earlier work in the richness of learning which went into its preparation and the art with which that learning was ordered. Every chapter was packed with detail about the way the British of the past had lived, what their houses were like, how they earned their daily bread, what they wore, what they drank, what their intellectual and artistic interests were, how they behaved to one another and to foreigners and what they believed about God. And all this was served up in a sequence of vivid concrete instances, through the medium of Trevelyan's polished but unaffected prose. It is particularly fascinating to watch the social panorama of one age dissolving into that of the next: an aspect of English history that had never before been realized in such clear detail or with so little prejudice.

A Critical History of English Poetry by Sir Herbert Grierson and Dr. J. C. Smith must be considered a remarkable achievement for the war years in which it was completed and published. It was a valuable reference book and a stimulus to further reading for anyone who had already made some explorations into the vast field of English poetry; the reader would not find any inspired vision of the meaning of that poetry's great fruitfulness and continuity or any deeper philosophical or social probing; he would, in fact, be well advised to look elsewhere for guidance in the complex poetical landscape of the 20th century; but he could not fail to rise from a reading of it mentally enriched by the immense learning, the balanced enthusiasm and wide sympathies of the two distinguished authors. Its particular excellences include a far fuller and juster appreciation of Scottish poetry than any comparable critical history; an admirable chapter on John Milton, another on John Donne that could scarcely be bettered and a series of chapters on the romantic poets, William Wordsworth, George Gordon, Lord Byron, William Blake, Percy Bysshe Shelley and John Keats which show an intimate * sympathy and a penetrating wisdom.

The field of literary research which produced the most interesting results during these years was perhaps that of Shakespeare's historical plays. One of the most significant achievements of Shakespearean scholarship since 1900 had been the rehabilitation of Shakespeare as a highly educated man, who in intellestual matters could hold his own in the most brilliant circles of Elizabethan England. In Shakespeare's History Plays Dr. E. M. W. Tillyard carried this process of rehabilitation, which owed so much to the pioneer labours of J. S. Smart and John Dover Wilson, an impressive stage further. It should be considered in connection with Dr. Tillyard's earlier book, The Elizabethan World Picture and Dover Wilson's The Fortunes of Falstaff. In the former book Dr. Tillyard, following a line parallel to that of some distinguished U.S. scholars,

had suggested that the mediaeval idea of the cosmic order, in which man had a central place, bound by the most complex affinities and correspondences to the heavenly beings above him and the beasts and vegetables below him, persisted in the thinking of the Elizabethans to a degree to which earlier criticism had been all too blind. Dover Wilson, in his brilliant and controversial The Fortunes of Falstaff, showed how perverted the popular idea of Prince Hal, afterward Henry V, had become because the mediaeval background, the belief in rank and order and the beauty of strong central authority which Shakespeare shared with his contemporaries, had been forgotten. In Shakespeare's History Plays, Dr. Tillyard argued with considerable force that the particular Elizabethan expression of this conception, the legend of the Tudors as the heavenblessed restorers of peace and order in England after the disasters which followed the violation of the sanctity of kings by Bolingbroke's murder of Richard II, was the inspiration of Shakespeare's long sequence of historical plays; and that the three parts of Henry VI were all from Shakespeare's hand and fitted into their author's elaborate and daring intellectual scheme, though of earlier composition than the Falstaff plays which they follow historically.

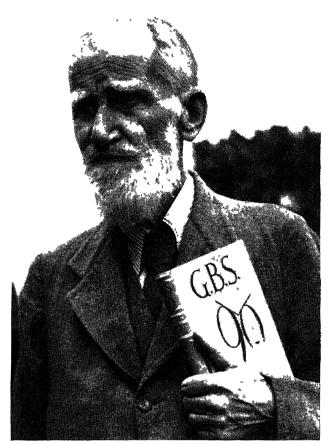
Reporters and Witnesses.-The years between 1937 and 1946 were the years of supremacy, in public interest, of the reporter, the journalist following the armies and investigating the secrets behind their movements and the young man with no assignment to any paper, news agency or broadcasting outfit who was anxious to record his experiences in the thick of the violent happenings of his time and communicate them to those who stood on the circumference. In this way books, stories and articles in hundreds and thousands came out of the Spanish Civil War, the Chinese war and World War II and its origins; and some of them had a claim to rank as literature. Because they were not strictly speaking novels, short stories or history, they must be the subject of separate consideration here. It is at the same time important to point out that it was extremely unlikely that all the significant work falling under this head had been written by the end of 1946.

Outstanding among the books about the Spanish Civil War were G. L. Steer's The Tree of Gernika, Arthur Koestler's Spanish Testament, George Orwell's Homage to Catalonia, T. C. Worsley's Behind the Battle, Tom Wintringham's English Captain and John Sommerfield's Volunteer in Spain; about the civil war in China one book was of special interest, for it was written by a well-known poet and a well-known young novelist in collaboration: Journey to a War by W. H. Auden and Christopher Isherwood. World War II produced, inevitably, a great many more. First place should perhaps go to The Last Enemy by Richard Hillary, because the author, a young pilot who was badly burnt in action and finally killed in an accident, attempted not so much to describe his outward experiences as to record his inner psychological development under the impact of war and to estimate the significance of the necessity of battle for his whole generation. Not all his contemporaries agreed with his viewpoint or his conclusions, but very few, except among the poets, came anywhere near his depth of reflection. Of the more purely descriptive individual books, the anonymous Fighter Pılot, one of the first, remained one of the best. Many others were both moving and effective in writing, with J. Mallalieu's Very Ordinary Seaman, Captain Anthony Irwin's Infantry Officer, Wing Commander R. D. M. Gibbs's Not Peace but a Sword, Brian Stone's Prisoner from Alamein,

F. Majdalany's The Monastery and Guy Pearce Jones's Two Survived among the more notable successes. In the ranks of the reporters proper, Alan Moorehead's African trilogy, Mediterranean Front, A Year of Battle and The End in Africa, acquired a unique place for their descriptive power, their range of sympathy and sober intelligence of judgment; very close to them in interest came Alexander Clifford's Crusader and two books which show a sensitiveness to human values and an appreciation of atmosphere quite out of the ordinary: We Landed at Dawn and Birth of an Army by A. B. Austin, who was killed during the fighting in Italy.

The war correspondents during World War II had a unique opportunity of writing history as it was being created; but as the war went on it became more and more evident that an extraordinarily rare combination of qualities was required for success. Those who had the artistic gifts too often lacked the opportunities, and those, like the war correspondents who had all the opportunities of observing and participating in the drama at every level, too often lacked the discrimination, the judgment, the sense of human perspective and the feeling for words that could have turned their dispatches into literature. Above all they lacked a controlling emotion about the event witnessed, the only quality that could have given them spiritual depth and therefore significance beyond the interest of the moment. Among the few with a claim to success as artists, Alan Moorehead, Alexander Clifford and A. B. Austin ranked high, precisely because they possessed this quality. In Crusader (afterward rewritten as Three against Rommel) Clifford's eye was on the war itself and not the surface froth of it; the narrative has a continuous sobriety and awareness, and one is given not only a sense of the whole scene, which no ordinary soldier within his confined sphere of action could have had, but also a vivid close-up of selected details which give the scene life, and, beneath the outward drama, glimpses every now and then of what it meant to be human beings inside the armour plating and behind the barbed wire. The same human respect is the outstanding quality of A. B. Austin's two books; his senses as well as his mind were continually alert, and his observation of small natural details and casual but characteristic remarks of the soldiers were extremely telling. More than any other correspondent he gave the impression of intimacy, of being one of the men whose exploits he described rather than apart from them, although he did not lose sight of the wider picture and the lesson of each experience in relation to the conduct of the war. Like Austin, Moorehead gave a memorable account of the fighting on Longstop Hill; his battle pictures, particularly of tank battles with their extraordinary confusion, violence and monstrosity, are all fine pieces of work, but the greatness of his achievement in his trilogy on the war in Africa-an achievement he did not quite equal in his reporting of the last phase in Europe-lay in his capacity to set these vivid close-ups in perspective in the general picture, so that they give clear and living portraits of generals and intelligible descriptions of headquarters' planning beside the battle scenes and details that skilfully sketch in the mood and behaviour of ordinary soldiers, sailors and airmen and the atmosphere of the landscape. He was also extremely fair and commendably free from the fault that marred so many otherwise gifted correspondents' work, that of excessive partisanship for the particular group or army to which he happened to be accredited.

The period was not particularly rich in good books of travel, chiefly because world events severely restricted the opportunities of free and unofficial travel. Mention should,



George Bernard Shaw celebrated his 90th birthday on July 26, 1946. He is shown holding an anniversary book about himself edited by his neighbour at Hertfordshire, Eng.

however, be made of F. D. Ommaney's South Latitude and North Cape, Freya Stark's impressive books on Arabia, The Gobi Desert by Muriel Cable and F. French, Sacheverell Sitwell's Roumanian Journey, Peter Fleming's News from Tartary and Rose Macaulay's delightful compilation of the works of earlier travellers in They Went to Portugal.

Drama.-The English dramatists of the period belong properly to another article in this compilation (see THE-ATRE); but they had their more purely literary value as well as their stage appeal and success, and from this point of view the present article can not be brought to a conclusion without mention of George Bernard Shaw's Geneva and In Good King Charles' Golden Days; J. B. Priestley's Time and the Conways, Music at Night, Johnson over Jordan, They Came to a City, Desert Highway and other plays; of Rodney Auckland's The Dark River and Sean O'Casey's The Star Turns Red, Purple Dust and Red Roses for Me. O'Casey was a natural poet, although he did not use verse in his plays, and no contemporary dramatist could rank with him for the rhapsodic, imagestudded beauty of his supreme passages. During the decade 1937-46, he also wrote two volumes of autobiography, I Knock at the Door and Pictures in the Hallway, in which he displayed the same gifts for picturesque and spirited writing in a slightly lower key, the same typically Irish mixture of humour and romantic colour. The poetic drama of W. H. Auden and Christopher Isherwood, of T. S. Eliot, Stephen Spender and Norman Nicholson have already been mentioned in the discussion of their poetry. The plays of Noel Coward, Terence Rattigan, Emlyn Williams and James Bridie, four leading playwrights of the

period, seemed to belong essentially to the stage and to have only a diminished life in the library.

Achievement.—Any assessment of the creative endeavour of the period as a whole, could not fail to note the multiplicity of talent, and at the same time the rarity of occasions on which a gifted writer of promise developed into a really commanding figure in literature. Looking at it from what was perhaps too close a viewpoint for an altogether satisfactory judgment, critics were inclined to believe that it might be chiefly remembered in time to come by anthologies-of poems, stories, critical essays and other selected prose passages. The fragmentation of consciousness caused by the excessive pace, danger and complexity of life in an age of scientific hypertrophy was the young writer's chief enemy; brave was the spirit and ruthless the will that could triumph in devotion to an artistic calling under such circumstances. Leisure, moreover, was hard to find even if the will were there, and the problem of patronage was more acute than for generations. And yet it was perhaps only in this period that the vacuum created by the enormous casualty lists of World War I was fully felt, the death of a few distinguished elder figures impoverishing literature quite disproportionately; and, with the exception of two or three years at the end of the period when the exhaustion of six years' war strain and war work was telling at last, the general impression was one of vitality and of a continuing balance between tradition and experiment that few if any other countries could show. (See also American Literature; Australian Litera-TURE; BOOK PUBLISHING; CANADIAN LITERATURE; LITERARY PRIZES; POETRY.)

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Eniwetok

See Marshall Islands; Pacific Islands, Mandated; World War II.

Entomology

The ten-year period from the beginning of 1937 to the end of 1946 may truly be termed the "Golden Age of Entomology." During this space of time more progress had been made in this science than in any like period in its history. In fact, it may rightfully be said that in certain fields, especially in medical entomology, economic or agricultural entomology and certain phases of systematic entomology, notably the studies of mosquitoes and flies affecting human health, more had been accomplished during these ten eventful years than during all the preceding years. Many factors intimately connected with the prosecution of World War II were directly responsible for the tremendous strides in entomology during this time. It was the first great war fought under tropical and subtropical conditions which necessitated the control of malaria, yellow fever, typhus, pappataci fever, kala-azar, dengue fever, plague, trypanosomiasis, filariasis and other insect-borne diseases which were often more destructive to human life than the instruments of war. The magnitude of operations were so extensive as to affect every commodity in the economic system. Many of the most important insecticides were either wholly restricted or greatly limited, and new ones were hastily rushed into their places. Some of these,

especially DDT, proved to be phenomenal in the scope of usefulness and became very important factors in the control of many kinds of insects and in the winning of the war. The production and conservation of food gave great impetus to insect control. The ravages of insects in victory gardens gave many lay and professional men and women their first insight into the necessity of insect suppression and the uses of insecticides. The values of insect eradication, quarantine and the many intricate problems dealing with insects became very apparent to all and created, for the first time in history, a public interest and concern, and support in relation to the whole field of entomology. Thus, in ten years, this relatively young science rubbed shoulders with chemistry, physics, medicine and other well-recognized traditional sciences.

Prior to the Outbreak of World War II.—During times of peace entomologists are concerned chiefly with teaching and research work having to do with the general routine of economic entomology, medical entomology, horticultural quarantine and investigations in history and systematics. The enormous losses inflicted on man's food supply during normal conditions amounted in the late 1930s to several billion dollars annually in the U.S. alone, and a staff of research and field men was employed to cope with the unpredictable situations as they arose.

In 1937 E. P. Johnson, Ithaca, N.Y., showed that the chicken mite, Dermanyssus gallinae, could transmit the causal agent of leucosis in fowls from infected to healthy birds. The scientific name of the common North American chigger, according to A. C. Oudemans, became Trombicula alfreddugesi, of which Trombicula cinnabaris and Leptus similis are synonyms. The mite, Tarsonemus bancrofti, was observed as a pest of sugar cane in Louisiana; it was first noted in the United States in Florida in 1935. Australian and New Zealand tomato mite was described as Phyllocoptes lycopersici by A. M. Massee. It was first noted as a pest of greenhouse tomatoes in New Zealand in 1936 and was later suspected to be identical with the species subsequently found in California in 1940. The destructive citrus bud mite, first noted in southern California in June, was described as Errophyes sheldoni by H. E. Ewing in Nov. 1937. The first complete investigations of the life history and effective control of the mealy plum aphid, Hyalopterus arunidinis (H. pruni) were made and published in California by L. M. Smith.

The golden buprestid, Buprestis aurulenta, was caught near Auckland, N.Z., in 1937; it may possibly have emerged from timber shipped from the United States, especially from the Pacific coast, where the beetle is common but of no great economic importance. Shipments up to 8,127 larvae of the predatory elaterid beetle, Pyrophorus luminosus, were sent from Puerto Rico via the United States and England for colonization and to prey upon the larvae of Lachnosterna smithi, a serious pest of sugar cane in Mauritius. In France a control campaign on the Colorado potato beetle, Leptinotarsa 10-lineata, was renewed in five new departments in 1937; no control measures were necessary in that year because of unfavourable weather conditions. Extensive flights were noted in July and August, and quantities of adult beetles were washed up along the Morbihan coast.

Legislation was enacted in a number of European countries during 1937 in an attempt to prevent the spread of the Colorado potato beetle from France into the British Isles, Germany, Belgium, the Netherlands and Luxembourg. The beetle was reported in 22 communes in Bel-

gium in 1937; the previous year it occurred in 116 foci in 45 communes. It was first taken in the Netherlands in 1939 and more than 200 small infestations of it were discovered in Switzerland.

The cowpea weevil, Bruchus analis, was first discovered in South Africa by M. J. Costhurzen and F. X. Laubscher in 1937; it was confused with B. marshalli and B. chinensis. The May beetles, Melolontha spp., were very injurious to forest trees in Germany; the only method of control was by hand-picking the larvae and adults. Fuller's rose weevil, Asynonychus godmani, was first found in New Zealand. The clover seed weevil, Tychius picirostris, was first reported in North America in Vernon, B.C., in June 1937 on alfalfa (lucerne) and red clover. It had, however, been found in British Columbia between 1924 and 1930, and in 1933.

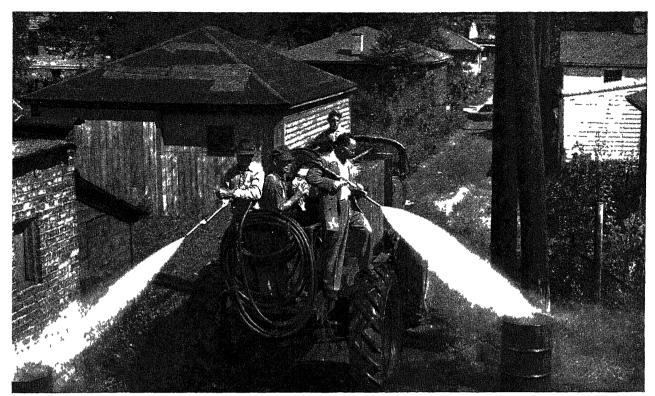
A new and serious potato weevil, Epicaerus cognatus, appeared in Mexico—intercepted at New Orleans, La., in 1922. The larvae burrow throughout the tubers and penetrate as deep as eight inches to pupate in the ground. Adults feed exclusively on potato foliage, Otiorhynchinae.

Eradication of sweet potato weevil, Cylae formicarius, was begun in the southern states during 1937 by the United States department of agriculture, bureau of entomology and plant quarantine in Alabama, Georgia, Louisiana, Mississippi and Texas. In a survey of 172 counties, 2,555 infested properties were discovered in 33 counties. Eradication included the destruction of infested seedbeds, self-sown sweet potato plants on infested properties and adjoining areas and to wild food plants, as well as the cleaning of infested fields and stores.

The European corn borer, Pyrausta nubilalis, ranged from Guam and the Philippines to Japan, through all of Asia, central and southern Europe and northern Africa to North America, attacking corn (maize), millet, sorghum, hemp, hops and other plants. It was active during 1937 in Japan and China and persistently extended its territory and injuries in the United States and Canada. The oriental fruit moth, Laspeyresia molesta, extended its distribution from northern Italy into the Ticino, Switzerland, and also near Lausanne, Switzerland. Forty species of mosquitoes were known to occur in Germany up to the year 1937. Outbreak of plague occurred in Mwanza, Tanganyika territory, between Feb. and June 1937; it was believed that the outbreak was started by infected fleas carried in hides received from an endemic rural area.

The flies of the family Tyrpetidae, known as fruit flies, are cosmopolitan and were among the worst pests of fruits in many countries. The Mediterranean fruit fly, Ceratitis capitata, was present on every continent except North America although it occurred in nearby Bermuda. It caused serious injury in various parts of its range to a wide variety of fruits, especially citrus fruits, peaches, guavas, apricots, grapes and figs. The olive fly, Dacus oleae, is also a very injurious species. In Italy, Spain and France it caused great losses to the olive industry. These fruit flies were effectively quarantined by the United States after the passage of the national Fruit and Vegetable Quarantine No. 56, Nov. 1, 1923.

In the United States the apple maggot, Rhagoletis pomonella, and the cherry maggots, R. cingulata and R. fausta, were the important members of the fruit fly group during 1937. The Mexican fruit fly, Anastrepha ludens, attacking grapefruit, guavas, sapotes, oranges and other fruits in Mexico, Nicaragua and northern South America, first entered the lower Rio Grande valley in the United States in 1927 and again in 1929. According to G. W. Herrick, a veritable epidemic of the common dog flea occurred in the



Preventive measures against infantile paralysis were taken at Lyons, Ill., during the summer of 1946, when miles of alleys were sprayed with DDT to kill flies and mosquitoes suspected of carrying the deadly germ

eastern United States during 1937; this flea may infect children with an intestinal tapeworm.

The spruce sawfly (Diprion polytomus) outbreak in Canada in 1936 continued in east Canada and northeast United States on the white spruce, black spruce and balsam fir, and the damage increased. On the Gaspé peninsula half of the mature white fir, representing 10,000,000 cords or 47,500,000 cu.ft. or one-fifth of the total stands of spruce and balsam fir, was killed. The spread of the insect in North America covered 25,000 sq.mi. in the United States and 115,000 sq.mi. in Canada during 1937.

Metaphycus helvolus, the most important parasite of the black scale, Saissetia oleae, was introduced into California from South Africa by Harold Compere and H. S. Smith. Successful experiments with dichloroethyl ether in the control of sod worms, Crambus spp., were conducted in southern California by M. W. Stone and J. C. Elmore. Increasing use of cryolite as a dust and spray for the control of the codling moth and many other agricultural pests occurred during 1937. D. B. Mackie and W. B. Carter tested methyl bromide as a fumigant; preliminary experiments showed it to be promising in the control of insects on and in plant materials such as the potato tuber moth and on tomato pinworm, granary and rice weevil, confused flour beetle and others.

The value of coal tar oil for the destruction of aphid eggs was demonstrated by the investigations of H. N. Worthly and H. M. Steiner of Pennsylvania. Tartar emetic and sugar were successfully used as a spray to control citrus thrips, *Scirtothrips citri*, on lemons in southern California by A. M. Boyce and C. O. Persing.

In 1938 A. D. Imms of England wrote a book of more than 400 pages in which he gave a summary of advances in entomology to that time. The most impressive phase in which advance in knowledge of the science of entomology had been made was in insect palaeontology. Imms pointed

out that the fossils found in the rocks of the Permian and Triassic beds had revealed a remarkable insect fauna. The strata of rocks from which specimens revealing this new knowledge had been taken were located in Queensland and New South Wales, Australia, in northern U.S.S.R. and in Kansas in the United States. The rocks in Kansas furnished, perhaps, the most perfect fossil insects, which contributed largely to the advance in knowledge of the evolution and development of the orders of the Insecta.

Investigations had shown that insects are endowed with those remarkable gland secretions known as hormones. Notable additions to the knowledge of these active agents in insects were made. A series of experiments seemed to prove the presence of a hormone in the body of the vinegar fly, Drosophila melanogaster, with the power of changing the colour of the insect's eyes. The investigators demonstrated that tiny injections of a clear, yellow fluid, derived by treatment of finely ground pupae of the wild type of fly, into certain colour-type larvae produced adult flies with eyes modified from nearly colourless and pale pink toward brown. The hormone appeared to be very active since the authors estimated that 1 gm. could change the eye colour of 4,200,000 flies.

The European earwig, Forficula auricularia, was discovered in the province of Ontario, Canada, in 1938, and in three succeeding years 38 other infestations were found.

In the United States the year 1938 was noteworthy for severe injury by locusts and grasshoppers. Nearly all of the states between the Mississippi river and the Pacific ocean, together with Wisconsin and upper Michigan, were visited with light to severe infestations of these destructive insects. The most serious and widespread destruction occurred to small grains in parts of North Dakota and South Dakota, and to forage crops and range grasses in other states. The extensive flights of the lesser migratory locust, Melanoplus mexicanus atlanis, from its original breeding grounds, especially into eastern Montana, were noteworthy among the erratic activities of this species. In the corngrowing regions with their greater diversity of crops, the

differential grasshopper, M. differentialis, the two-striped locust, M. bivittatus, and the red-legged locust, M. femur-rubrum, were present and seriously injurious, while the long-winged locust, Dissosteira longipennis, caused severe injury in portions of Colorado, New Mexico and Texas. The provinces of Manitoba, Saskatchewan and, to a lesser extent, Alberta, Canada, also suffered extensively from incursions of these insects.

The potato tuber moth, Gnorimosohema operculella, was first discovered in the U.S.S.R. near the town of Patti on the Black sea in 1938. The larvae were mining leaves of tobacco, potato, tomato, eggplant and Datura stramonium.

A list of insects captured during routine quarantine inspections on seaplanes arriving at Miami, Fla., from Mexico, Central and South America in 1938 showed that of 398 aircraft examined, 187 harboured insects, and 166 of the 651 insects found were alive. Forty mosquitoes representing six species were taken. Each aeroplane was properly treated to kill all the insect immigrants.

In the Tennessee valley 35 species of mosquitoes were reported by S. E. Shields, including 5 species of Anopheles.

Tsetse flies, Glossina palpalis, Glossina morsitans, et al., are inhabitants of tropical and subtropical Africa, and are the vectors of the causative organisms (trypanosomes) of the two types of sleeping sickness of man, and of the disease of cattle known as nagana. The tsetse fly situation had been recognized as one of the chief biological problems of British Africa. Moreover, the problem had assumed a new and unexpected significance during the late 1930s in view of the suggested colonization of Tanganyika with European refugees, for two-thirds of the total area of that colony was infested with the flies. The British Colonial Advisory committee, however, according to the London Times, had already recognized the seriousness of the problem and had, earlier in 1938, recommended a grant of £207,974 to be used by the Tsetse Research department in Tanganyika, for an extended investigation of the flies. The problem was exceedingly complex and far-reaching, because of the intimate association of the biology and habits of the flies with the wild animals, the various types of vegetation, the streams and the forest areas of the region.

The third conference of the International Committee of the Colorado Potato Beetle was held in Zurich, Switzerland, March 3–5, 1938. The seventh International Congress of Entomology at Berlin, Germany, was held August 15–20, 1938. There were 351 delegates from all parts of the world. More than 1,000 entomologists registered and were in attendance. The International Locust conference was held at Brussels, Belgium, in Aug. 1938. The international implications of locust invasions were becoming more important yearly, and united action of many nations was urged to prevent the frequent devastations of large areas by locusts which breed in one country and migrate to and injure another.

During 1939 a severe outbreak of green bug, Toxoptera graminum, in Oklahoma caused an estimated loss of 100,000 acres of small grains, according to F. A. Fenton and H. H. Fisher.

The Colorado potato beetle, Leptinotarsa ro-lineata, was the subject of a good deal of attention in Europe during 1939, especially in Germany. Potatoes constituted an important food crop of peoples in northern Europe, a crop easily grown, harvested and stored; and anything tending seriously to lower its production became a source of considerable anxiety. Special effort was, therefore, made in

Germany during 1939, as World War II approached, to control the ravages of this pest. In Spain the beetle caused trouble from a phase of its presence in that country entirely apart from its direct injury to the potato plant. Northern Spain produced potatoes as an export crop to the British Isles. During the civil war of 1936-39 the beetle entered Spain, probably from France, and the growers found themselves greatly handicapped by a quarantine against their crop because of the danger of introducing the beetle with the export shipments of potatoes, although the beetle had been previously found in England. Early in 1939 while Poland still existed as a nation, an inquiry was made by an official of the Polish department of agriculture regarding the severity of the injuries caused by the beetle in the United States and the effectiveness of the spray program in holding the insect in check. The official stated that he had lately been in the Netherlands and Belgium meeting with a committee for the study and control of the Colorado potato beetle. It was evident that the presence of this insect in Europe was looked upon as a most serious problem. First records of the invasion of the Colorado potato beetle into western Germany were made April 7, 10 and 23, 1939.

The Rockefeller foundation, in charge of the yellow fever control and extermination program in Brazil, relinquished the entire work on yellow fever to the Brazilian national fever service, ministry of education and health, in 1939.

The effects of the accidental introduction of the African mosquito, Anopheles gambiae, into Brazil in 1930 was being felt very forcibly by the severity of malaria epidemics following in the distributional wake of the mosquito. It was thought that the mosquito would not find conditions in the region of Natal, Brazil, suitable to its development, and that it might be easily exterminated. On the contrary, an outbreak of malaria due to the activities of the mosquito, of a severity unknown previously to the city, took place during 1930 and 1931; and by 1931 the mosquito had spread northward along the coast for a distance of 115 miles. By 1938 it had gone more than 200 miles north and west of Natal nearly to the source of the Jaguaribe river. The virulent type of malaria which it carried to this extended territory developed an epidemic which afflicted nearly 60,000 people in a population of about 70,000, of whom more than 5,000 succumbed to the ravages of the disease. The mosquito did not seem to have met any adverse conditions in Brazil that tended to check its spread.

Anopheles gambiae is a domestic mosquito which haunts the dwellings of man. It passes through its life cycle in seven or eight days, which enables it to increase rapidly and in great numbers. All of the evidence indicates that it was the most dangerous vector of malaria in the western hemisphere. H. E. Fosdick of the Rockefeller foundation pointed out in 1938 that unless some method of checking its spread were devised, it would eventually reach the southern United States in the north and Argentina in the south, thus creating a public health problem outranking all others in tropical America.

Harold Compere, entomological explorer for the University of California, recorded and described 28 species of primary parasites of the black scale, Saissetia olea, which he collected in Africa and shipped to California in 1936–37 for propagation and trial.

A strenuous attempt was being made in the entomological control of the cactus or prickly pear, Opuntia megacantha, which densely covers more than 2,000,000 acres in the Union of South Africa, by the introduction and distribution of the cactus moth, Cactoblastis cactorum, a

native of Argentina. During 1938, 12,000,000 eggs of the moth were distributed throughout the infested districts. Extensive destruction of the prickly pear plants by the caterpillars was encouraging.

A new weevil, *Hypera brunneipennis*, was discovered in alfalfa fields of the Yuma, Ariz., area in 1939; it was first believed to be the alfalfa weevil, *Hypera variabulis*.

The Argentine ant, Iridomyrmex humilis, was first found in Melbourne, Australia, in Sept. 1939; although this was the first positive record it is thought to have been there for several years previous. To combat the noxious St. John's wort, Hypericum perforatum, in Australia a number of beetles feeding on this plant were introduced into that country from Europe: Chrysomela hyperici in 1934; C. gemellata and Actinotia hyperici in 1939.

Extensive collections of insects in the air at altitudes up to 15,000 ft. by aeroplanes showed that many species, including both winged and wingless individuals, occurred as high as 14,000 ft. Twice as many insects were taken at 1,000 ft. as at 2,000 ft. More were collected in May than in any other month. Temperature was the most important factor governing the number of insects in the air at any given time. A surface temperature of 75° to 79° F. appeared to be the most favourable. The velocity of wind currents influenced greatly the distribution of insects through the air. When the velocity at the surface was 5 to 6 mi. per hour the largest number of insects at the lower altitudes was taken. In explaining the presence of the wingless specimens taken at altitudes above 5,000 ft., P. A. Glick said it was likely that these forms were transported in upper air currents, possibly for several hundred miles.

Developments in 1940 and 1941.—The tomato russet mite, *Phyllocoptes destructor*, was discovered on greenhouse tomato plants by S. F. Bailey in California in 1940—the first record of this mite in North America. The tarsonemid mite, *Hemitarsonemus latus*, a plant pest of economic importance, was first noted in Durban, Natal, Union of South Africa, by M. M. J. Lavoipierre.

W. M. Stanley was first in North America to photograph by X-ray the discrete particles of the tobacco virus, a single particle of which measured 15 millimicrons in cross-section and about 330 millimicrons in length.

Tartar emetic, SbOKC₁H₁O₆, had been found effective in the control of certain thrips, including the injurious citrus thrips, Scirtothrips citri, of middle and southern California and the gladiolus thrips, Taeniothrips gladioli, of widely separated areas in the United States and Canada. The material was applied as a spray and had little or no serious effects upon the plants treated. The dinitrophenol and cresol compounds, experimented with as ovicides for aphids, had given seemingly good results and were being extensively used in various parts of North America in the destruction of eggs of Hyalopterus arundinis, Aphis pomi, and Aphis rosea on dormant deciduous fruit and ornamental trees. These chemicals replaced to some extent the coal tar sprays because they are less toxic and injurious to the operators of spray equipment.

Methyl bromide fumigation had been greatly extended during the late 1930s and by 1940-41 had reached vast proportions in connection with the fumigation of fruits and plant materials shipped in carload lots. In the handling of plant materials originating in the areas infested by the Japanese beetle and the white-fringed weevil some 4,000 cars were treated during 1938-39. This material was also extensively used for fumigating granaries, mills and warehouses for insects infesting stored products and was also being tested for oil-infesting species. Methyl bromide as a fumigant had been used for treating infested fruits

and vegetables like the larvae of codling moth in apples and pears and the potato tuber moth in potatoes.

The Swiss firm of J. R. Geigy, A.G. discovered the insecticidal properties of DDT and was granted a patent on March 7, 1940, by the Swiss government.

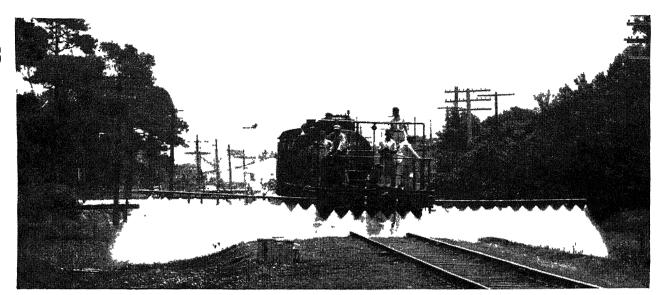
Plant virus diseases transmitted by insects received a great deal of attention from botanists, plant pathologists, entomologists, physiologists and physical chemists in the early 1940s. Great strides had been made as a result of their studies, research and publication, as well as by those made in the medical and veterinary fields of viruses affecting humans and other animals. By means of very careful and exacting technique plant viruses (first discovered in 1892) had been examined most critically, and a number of distinct strains were recognized for many of them. For instance, there were, in 1940, four distinct strawberry viruses indicated as Fragaria virus 1 to 4. While plant viruses are transmitted by many insects, the most important vectors are aphids and leafhoppers. The green peach aphid, Myzus persicae, appeared to be involved more than any other single insect.

During the years preceding World War II there had been ever-increasing demands in the United States for insects as food for birds, fishes and other animals. These demands created a market which had been largely met by foreign countries; thus the German occupation of large sections of Europe shut off some main sources of supply. The meal worm, Tenebrio molitor, and other species sold in living condition constituted one of the most important foods for small domestic animals. While they had been raised extensively in relatively small lots in the United States, they had been largely imported from the Netherlands, where they were reared in great quantities, but never sufficient to supply all of the market demands. Larvae of the broad-horned flour beetle, Gnathocerus cornutus, were also reared commercially to feed young birds in Europe.

Ant eggs are in reality the pupae of the common red wood ant, Formica rufa, which builds large mounds or nests in the forested areas of Europe and North America. These nests are often very large and may contain as many as 100,000 individuals. By controlled robbing, the nests may be kept at a relatively high productivity. The world supply prior to World War II was produced chiefly in Finland, which controlled the market. These dried ant pupae were generally used in feeding young birds and other animals.

Mexican dried flies or water boatmen (Corixidae) include fresh-water insects, particularly the water boatman most often adulterated with fairy shrimps (Anostraca?) and backswimmers (Notonectidae). From 25 to 50 tons were imported annually into the United States during the late 1930s and early 1940s from Mexico and parts of Central America.

The development of biological control methods for the subjugation of insect and plant pests had continued with considerable headway during the years 1920–40 and by the latter year had reached a peak of great importance in the world of economic entomology. This method was extensively employed in connection with many important insect and weed problems such as the gypsy and brown-tail moths, the Japanese beetle, the sugar-cane borer, the oriental peach moth, the woolly apple aphid, the European earwig, the European elm leaf beetle and the European spruce sawfly in North America; sugar cane and fruit insects in Hawaii; fruit flies, woolly apple aphid, St. John's



Sprayer attached to railroad car being operated for white-fringed beetle control

wort and prickly pear in Australia; prickly pear and many orchard insects in South Africa; and like problems in other geographical areas. Special emphasis was placed upon the use of *Trichogramma evanescens* as an egg parasite of many destructive moths and particularly of the sugar-cane borer and cereal-infesting insects.

The establishment of the Juan Mina Entomological station of the Gorgas Memorial laboratory in the Panama Canal Zone extended the arm of research deeper into the problems of tropical medicine.

The grape leaf skeletonizer, Harrisiana brillians, was first discovered infesting grapevines in California in San Diego county during 1941; the insect was later regarded as a potential danger to the great grape industry of the state.

For many years agriculturists and entomologists had been selecting and breeding plants showing resistance to the attacks of various insects. C. M. Packard in 1941 showed that Hessian-fly-resistant wheats had been observed in the United States after 1781, and that thousands of varieties of wheat had been tested and promising selections made from such well-known varieties as Dawson, Karovale, Marquillo and countless other breeding strains. It is worthy of note that Hessian-fly resistance is transferable according to the laws of genetics from spring to winter wheat and vice versa without obtaining objectionable features and that resistance to the fly may be successfully combined with resistance to fungus diseases in a single homozygous line. Wheat varieties were also known that are resistant to the chinch bug, the wheat stem maggots, fruit fly and joint worms. Selections of alfalfa were reported to be resistant to the potato leafhopper and to the pea aphid.

Attempts to find substitutes for the heavy metal insecticides in codling moth control resulted in a vast amount of investigational work. Organic substitutes which had given some promise were extracts of nicotine, pyrethrum, phenothiazin and xanthane, and combinations of these extracts with petroleum and fish oils, bentonite and other materials. The pyrethrum and phenothiazine extracts did not prove as satisfactory as other extracts in 1941.

That the fowl malaria organism, Plasmodium gallinaceum, might be transmitted by the European mosquito, Culex quinquefasciatus, was demonstrated in 1941 by experiments of L. Vargas and Enrique Beltrain, who dissected sporozoites of the parasite from the salivary glands of this mosquito reared in the laboratory.

The problem of the sheep tick, Ixodes ricinus, causing

losses up to 50% in sheep not acclimatized to the diseases known as louping-ill and tick-borne fever, was also attacked in 1941. The tick is able to survive on a variety of hosts in the absence of sheep and is well-adapted to the moorland and hill regions where it is active in spring and early summer and again in the fall. Derris dusts afford protection for a period of two weeks for lambs, and a dip composed of either a 0.2% arsenious oxide or 0.02% derris resin is effective on adult sheep for a period of 10-14 days.

Two new species of spore-forming bacteria causing milky diseases of Japanese beetle larvae were described in 1941 as Bacillus popilliae sp. n. and B. lentimorbus sp. n. by S. R. Dutky. The spores occur mainly in the blood of the grubs reaching from 20,000,000,000 for the former and 10,000 for the latter in a single larva. Ethyl bromide was used in fumigating 4,000 cars of plant materials in carload lots originating in the areas infested by the Japanese beetle and the white-fringed weevil.

Basic copper arsenate of lead appeared as one of the newer stomach poisons. It proved more toxic than calcium arsenate of lead to the most important insects.

Effect of U.S. Entry into World War II.—The attack on Pearl Harbor greatly increased the difficulties and responsibilities of U.S. entomologists. More effective control measures were needed, fewer insecticides were available and less manpower could be used. It was obviously important to produce as much food as possible, and every effort was made to prevent and reduce losses due to insect infestations of the growing crops. Special programs were inaugurated to deal with such injurious insects as grasshoppers and locusts, cutworms and army worms, chinch bugs, Hessian flies, potato beetles, codling moths, cotton boll weevils and a host of other insects that yearly destroyed 5% to 20% of the crops of U.S. farmers. Many peacetime activities were abandoned to unite the efforts of agricultural extension specialists, leaders of farmers' organizations, entomologists of agricultural experiment stations, colleges of agriculture and employees of state, county and city governments throughout the entire United States. Of even greater importance was the proper storage and preservation of foodstuffs following harvest and especially the products being supplied to army cantonments and shipped overseas to the Allies. Losses occasioned by storedproduct insects such as grain moths, beetles, weevils and

mites, although tremendous during normal times, were unbelievable under war conditions. The devastation of vast stores of wheat by insects and rodents during World War I had prompted the British in 1940 to adopt drastic measures to preserve every pound of wheat, beans, peas, dried fruit, cured meat and other essential food products raised in or shipped into the United Kingdom. Accordingly, all the entomologists available were detailed to the tremendous task of food protection. The bureau of entomology and plant quarantine, U.S. department of agriculture, issued a large series of special circulars dealing with subjects pertinent to the national defense program. Topics treated in these circulars were: chiggers, bedbugs, cockroaches, fabric insects, fleas, houseflies, stable flies, screwworms, horse bots, food insects, fumigation, lice, mosquitoes, powder-post beetles and termites. To become really effective the work had to be carried beyond the fields and points of storage to the supply depots of the army camps and aboard naval ships. A large number of entomologists trained for this particular kind of work were available in 1941 for service in the quartermaster's department, where this important work was centred. The routine involves the use of suitable tight containers for the food, such as barrels, cans, closed bins, sealed packages and cartons; and airy, well-ventilated and dry storage and refrigeration facilities. In spite of all precautions generally taken, infestations seemed likely to appear, especially in products a year or more old. Although such contaminated food was unfit to eat, it often escaped detection. In addition to the insects actually breeding and living in the food products, buildings and ships could also harbour such nuisances as cockroaches, ants, houseflies, fleas, bedbugs, lice and other vermin that added to the spoilage of food supplies and to the discomfiture of the inhabitants.

Under such conditions control measures were imperative. These required the supervision of an expert experienced in the uses of heat, cold storage and such fumigants as hydrocyanic acid gas, calcium cyanide powder, methyl bromide, chloropicrin, sulphur dioxide, naphthalene, paradichlorobenzene, ethylene dichloride, carbon tetrachloride, ethylene oxide and other chemicals. These fumigants could not be administered without certain other complements such as tight compartments, bins, rubberized tarpaulins or special fumigating rooms and adequate gas masks for the protection of the operators. The conditioning of rooms and food supplies for fumigation required knowledge, experience and skill. The net results of such pest control operations prevented loss of supplies and guaranteed wholesome food.

Insects affecting the health and comfort of soldiers and sailors included crab lice, body lice, fleas, bedbugs and mosquitoes infesting the person and sometimes transmitting serious diseases such as typhus and trench fever. It was rather difficult to understand why lice, for instance, always appeared on soldiers concentrated in camps even though the establishments were new, whereas under normal conditions these insects are relatively rare even under the crowded conditions of large cities. One explanation was the lack of proper laundering and cleaning of clothes and a lack of hot-water facilities, often not available in temporary camps. The solution of the louse problem was an almost impossible one during World War I, although the principles of delousing by steam, boiling water, hot air and fumigating were well-known.

In European armies, especially in the German army, elaborate equipment had been perfected for the treatment of clothing by the use of powdered cyanide. The proper amount sealed in a tin can was placed in a machine

which automatically carried it into a small tight compartment which opened and emptied the fumigant and a short time later delivered the garments, heated and aired, to the soldier emerging unclothed from a spray treatment which ensured him a clean body and pest-free clothes. The bedding, all sleeping and personal effects and the barracks as well, were fumigated or otherwise treated for lice, bedbugs and fleas by the judicious use of dry heat, hot water, live steam, chemical dusts and sprays, fumigation, cold or hot storage or exposure to the sun. Body treatment consisted of clipping the hair closely and the use of mercurial ointments, mixtures of equal parts of kerosene and olive or other vegetable oil or kerosene and vinegar, special chemical soaps, oil and soap emulsions and a powder composed of 3% rotenone, 96% naphthalene +2% creosote +2% iodoform. The clothing, blankets and other woollen fabrics and furs could be protected from attacks of clothes moths and carpet beetles by moth-proofing with chemicals, the constant liberal use of naphthalene and paradichlorobenzene crystals, refrigeration and cold storage, fumigation and frequent exposure to the hot rays of the sun. Bedbugs were eliminated by fumigation with hydrocyanic acid gas, heating to 125°F. to 130°F. for 12 hr. and by spraying the bedsteads, walls, floors, ceilings and furniture with light petroleum oils.

The avoidance of mosquito-infested areas was a prime consideration in the establishment of permanent or even temporary camps for soldiers or civilians. In the subtropical and tropical regions, mosquito-free areas were not always available, but there was always the possibility of selecting places with the lowest populations or with the greatest opportunities for mosquito control. Such places should be either far from swamps, standing fresh or brackish water or sufficiently elevated to permit drainage and the elimination of standing water. Otherwise great expense had to be incurred in order to fill low places, pump out the standing water, clear away aquatic vegetation, treat the water with light oils, Paris green, borax, pyrethrum and other insecticides and to afford protection to the men by means of repellent sprays and ointments, netting. screening and other safeguards.

W. R. Thompson, superintendent of the Farnham House laboratory was stationed at the Dominion Parasite laboratory, Belleville, Ontario, Canada, where the Canadian government provided quarters and facilities for his work and that of his staff on the biological control of insect and plant pests during the war.

General Developments of 1942 and 1943.—The oriental fruit moth, Laspeyresia molesta (Cydia), was discovered in Orange county, Calif. in 1942; this was the first time the insect had been found on the Pacific slope of the United States. Larch sawfly, Pristiphora (Nematus) erichsoni, crossed Canada to the Okanaga valley, approximately the western limit of its host Larix occidentalis.

F. F. Smith conducted experiments in the control of the gladiolus thrips, *Taeniothrips simplex*, with tartar emetic combined with molasses and syrups—a relatively effective treatment.

Because of war needs many important insecticides were allocated for other purposes based on end use. Those most affected were antimony, arsenic, copper, mercury and zinc compounds, rotenone, pyrethrum and tar oils. Fortunately, considerable quantities of certain of these prepared remedies were still in the stocks of the insecticide manufacturers and therefore available as long as these reserve supplies held out.

Among the new and promising insecticides in 1942 were: basic copper arsenate for leaf-eating cotton insects; barium arsenate for controlling blowflies on sheep in Australia; phthalonitrile for leaf- and fruit-eating insects; thiourea and derivatives, which proved to be toxic to the larvae of flesh flies and to the larvae of the clothes moth; xanthone, which gave some promise in controlling codling moth on apples; potassium antimonyl citrate as a potential substitute for tartar emetic in the control of citrus thrips; phenothiazine, which proved toxic to the larvae of the blowfly in Australia and the codling moth larvae in the United States; calcium chloroacetate, somewhat less effective than sodium arsenite in grasshopper baits in South Africa and effective against maggots of the blowfly in Australia; selenium compounds, toxic to orchard mites, Tetranychus and Paratetranychus, on grapes, citrus, cotton, etc., in the United States; Paris green, a valuable larvicide for anopheline mosquitoes, as effective as pyrethrum and petroleum oil emulsions; dinitro-ortho-cyclohexylphenol and dinitro-ortho-cresol, very effective as aphid ovicides on dormant trees; nicotine, pyrethrum and rotenone compounds, still very important in the control of many insects infesting plants that could not be treated with heavy metal poisons. Derris or nicotine dusts were suggested as possible combinations with calcium arsenite dusts to kill both the cotton boll weevil and the cotton aphis with single applications. Acrytonitrile and chloracetonitrile were shown by H. H. Richardson and A. H. Casanges to be promising new fumigants for the control of the confused flour beetle and the bedbug. Arsenate of lead was still considered to be the most effective stomach poison for the control of codling moth, especially for the calyx and first cover sprays. A new cockroach poison, 4, 6-dinitro-o-cresol, was reported by J. B. Gahan to be more toxic to cockroaches and to kill them more rapidly than either sodium fluoride or pyreth-

A summary of the advances in entomology up to the time DDT appeared was published in 1942 by C. H. Richardson, giving a fair idea of the great amount of research and field trials devoted to a vast number of new insecticides which were appearing at that time.

First tests were made in the control of body lice with DDT by members of the U.S. department of agriculture bureau of entomology and plant quarantine at Orlando, Fla. Powder and liquid preparations were formulated and the impregnation of garments was also perfected. This work paved the way for the use of DDT by the armed forces of the Allies. Similar successful tests were made in the control of bedbugs, houseflies, stable flies, fleas, cockroaches, ants, mosquitoes and many other household and agricultural insect pests. This new insecticide was singled out as one of the greatest discoveries of the time.

In 1943 W. R. Thompson edited a catalogue of the parasites and predators of insect pests, of great use to all entomologists and especially to those interested in biological control.

The tomato russet mite, *Phyllocoptes destructor*, was found to be injuring tomatoes in two counties in Colorado in 1943, but was readily controlled by dusting with sulphur; the case of controlling this mite made it appear much less dangerous than was first feared. Breaking in colour of the flowers of the annual phlox (*Phlox drummondi*) was shown by H. H. P. Severin to be due to asteryellows virus transmitted by the leafhopper, *Macrosteles divisus*, in California. The cabbage butterfly, *Pieris rapae*, a pest in Australia first found in Victoria in 1939, reached

New South Wales, Tasmania, and south Australia in 1940 and Western Australia in 1943.

A report on the organization set up in Brazil for the permanent nation-wide anti-Aëdes aegypti measures was issued in 1943 by the Rockefeller foundation. A monographic historical review of Anopheles gambiae in Brazil was also published by F. L. Sopher and D. B. Wilson of the Rockefeller foundation. In Sept. 1943, four females and one male of the yellow fever mosquito, Aëdes aegypti, were collected from east-central Oklahoma; this mosquito had not previously been recorded so far west at such a northerly latitude. The tropical rat flea, Liponyssus bacoti, was collected in Kansas for the first time, during the year.

A new soil fumigant, Shell D-D, was first used in 1943 by W. Carter in controlling soil mealy bugs in Honolulu; it also gave great promise in killing other soil insects and nematodes. Dinitro-ortho-cyclo-hexylphenol was used by L. M. Smith and C. A. Ferris as an effective ovicide for the mealy plum aphid, *Hyalopterus arundınis*, when applied in Feb. 1943 in California. This added a new method in dealing with aphids which pass the winter in the egg stage on deciduous trees and shrubs. United States patents on DDT were issued to Geigy Co., New York, N.Y., Sept. 7, 1943, and the first of this new insecticide was received in the United States for experimental purposes.

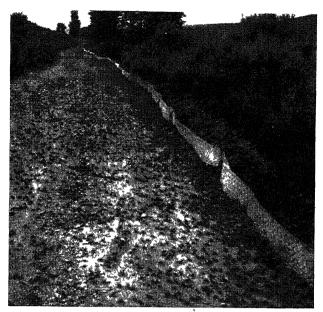
Events of 1944 and 1945.—The importance of entomology to the war effort in 1944 and 1945 was most forcibly expressed in the control of insects affecting human health. The subjection of malaria and typhus were the most outstanding accomplishments and the entomologists in the medical and sanitary corps added much to the success of this work. DDT was the outstanding insecticide employed. The preferred repellent for chiggers, because of cheapness and availability, was pure dibutyl phthalate, offering protection for 59 days. A band one-half inch wide was applied around the inside trousers and cuffs, the fly and neck of the shirt and a wider band around the upper parts of the socks. The recommendations were by A. H. Madden, A. W. Lindquist and E. F. Knipling.

Figures for 11 years' study of the black widow spider, Latrodectus mactans, in Maryland, released in 1944, showed that cases of poisoning from their bites, severe enough to require hospital treatment, were rare, with no fatal cases known. According to R. H. N. Smithers most of the cases of illness or death due to the bites of the females of Latrodectus indistinctus in South Africa occurred during the harvest season in the grain lands of the coastal belt of the western province.

The oriental fruit moth was discovered during 1944 on peaches, pears and other fruits in Orange county, Calif. It had completely crossed the continent of North America from Washington, D.C., where it was first introduced in 1916.

G. F. Finney, S. E. Flanders and H. S. Smith effectively employed the potato tuber moth, *Gnorimoschema operculella*, reared on potato tubers for the mass production of the parasite, *Macrocentrus ancylivonis*, for liberation in the orchards for the control of the oriental fruit moth, *Cydia molesta*, discovered in California.

The first introduction of insects into the United States for the control of a plant pest was a notable step in a new field of biological control in 1944. The insects in question were the chrysomelid beetle, Chrysomela quadrigemina (Chrysolina gemellata), and the buprestid beetle, Agrilus hyperici. They were imported by plane from Australia and arrived at their destination at Berkeley, Calif. Oct. 16, 1944. The object of this introduction was for the possible



Field barriers of metal used to control crickets

control and elimination of the St. John's wort or Klamath weed, Hypericum perforatum. This European weed had been widely distributed throughout the northwestern United States, chiefly through the agency of sheep and cattle. In many states it was of little consequence, but in parts of California, notably in the Sierra foothill counties of Nevada, Butte, Shasta, Del Norte and Humboldt, it had invaded literally thousands of acres of good grazing lands and made large areas of grasslands almost useless for grazing sheep, cattle and horses.

The bright green chrysomelid beetle, native to middle and southern Europe where it feeds only upon species of *Hypericum*, had been introduced by air from France into Australia in 1939 and 5,400 adults were liberated in August and October. Adults were not recovered until Oct. 1942, when some 4,000 were collected in one day. It was well-established in one locality in Australia and, because it flies readily, was becoming widely dispersed; there were great hopes for its effectiveness in destroying the St. John's wort.

The buprestid beetle, infesting only the roots of the weed, was not as conspicuous in its work as the former, but it nevertheless held promise as a most effective enemy of the St. John's wort. It was introduced into Australia from France in 1939 and 1940; 6,617 adults were liberated in four places in New South Wales, in all of which it at once became established. The beetle appeared to be a very effective enemy of the weed and as many as four larvae were found in a single root; many plants had already been killed by 1944.

Methyl bromide was extensively used in freeing clothing of the troops in the United States army from the body louse, *Pediculus humanus*. At this time DDT also was being experimentally used for the same purpose and quickly replaced all other methods for delousing. Extensive experiments were also under way in the use of DDT for the control of flies, bedbugs, mosquitoes and other insects and ticks in relation to the war effort. Tests were likewise being made in the control of all insect pests affecting humans, domestic animals, forests and agricultural crops and products. The production of DDT was taken over by the U.S. armed forces in 1944. The actual manufacture was assigned to certain chemical manufacturing companies—first to J. R. Geigy followed by E. I. du Pont de Nemours

& Co., Inc., Wilmington, Del., Hercules Powder Co., Inc., Wilmington, Del., Merck & Co., Rahway, N.J., and many others.

E. A. McGregor found that citrus thrips in southern California, which in 1939 and 1941 were easily controlled by spraying with tartar emetic and sugar, appeared to be resistant to this spray from 1942–44 and later.

The first comprehensive report on extensive experiments with DDT was issued by the bureau of entomology and plant quarantine in Feb. 1944. In it were described 50 separate experiments involving many kinds of insects; the report gave a fair idea of the many uses of this new insecticide.

In February, March and April 1944, the typhus outbreak which was raging in Naples, Italy, was completely stopped by applications of DDT dusts on all humans and the treatment of clothing to kill the lice and thus prevented the spread of the disease.

R. Wasicky and O. Unti showed that mosquito larvae were killed in periods of less than 5 minutes for a DDT concentration of 1:1000; up to 4.7 hours for one of 1:25,000,000; from 24.36 hours for one of 1:50,000,000; and more than 36 hours for one of 1:60,000,000. W. B. Herms and H. F. Gray, testing *Culex tarsalis* larvae and using DDT dissolved in ethyl alcohol and water, reported that dilutions of 1:600,000,000 by weight killed 45 of 50 larvae and 4 of 10 pupae in 48 hours.

During 1945 a number of investigators, including L. Haseman, J. P. Johnson and R. Stadel found that sulfathiazole, fed either in sugar syrup or in pollen substitutes, was an effective control for the disease, American foul brood, of honeybees.

The control of horn flies in cattle with DDT proved very effective and beneficial in 1945, especially to the dairy industry.

Rotenone, pyrethrum and nicotine compounds, so necessary in the protection of vegetable crops, were almost completely restricted for aerosol bombs, sprays and dusts for the armed forces prior to V-E day and V-J day. Arsenical poisons, sulphur and fluorine compounds, oils, cyanides and other necessary insecticides were often extremely scarce or altogether unavailable. Only small allotments of DDT were made available for small scale investigations and tests against agricultural insect pests. During the late war period there was also a trying shortage of spraying, dusting and fumigating equipment, and parts for the old equipment that was fast wearing out.

Methods of Applying DDT.-(1) As space sprays-aerosols, vapour sprays, and fly-sprays for killing insects on the wing in open spaces usually in buildings, tents, ships and in other enclosures. Out-of-doors they may be applied by aeroplane for mosquitoes, flies, gnats, sand flies and other insects that are moving freely in the air or resting on exposed vegetation. (2) As a fog spray-applied by means of a special fog machine, a modification of the smoke machines of the U.S. armed forces, in which the DDT is vaporized and mixed with steam and applied as very minute particles under high pressure as a fog. (3) As a residual spray-applied to surfaces which are resting places for insects; to runways; to light cords; hiding places and other surfaces frequented by insects, where residue may be deposited for prolonged effectiveness. (4) As dusts-dry mixtures containing 4% to 10% DDT diluted with a carrier such as talc or pyrophyllite; one part of DDT to nine parts of the carrier. (5) As suspensions-wettable or water-dispersable DDT powders, with wetting

agent to permit mixing with water. These powders are not soluble; the small particles being held in suspension. They are applied as sprays and paints. (6) As emulsions—DDT in solvents (white kerosene, xylene, etc.) plus a casein or other emulsifier to which water is added. This forms a true solution and is used at the rate of one gallon to cover goo sq.ft. of surface. It is applied to surfaces to kill insects resting or moving across them, and lasts over periods of one to three months.

DDT Compounds: (1)-Aerosols, or aerosol bombs. These were developed chiefly for use of the U.S. armed forces. The bomb is the container, usually metal, in which the insecticide is held. It does not explode. The aerosol is the insecticide contained in the bomb. It consists of the DDT together with some other material in liquefied gas under pressure. The contents are discharged by opening a valve which releases the pressure causing the dispersal of the insecticide in the air as a mist or fog which rapidly diffuses. The small particles hit the insects and kill them by direct contact. The contents of the bomb, as used by the armed forces, usually consisted of a mixture of DDT and purified pyrethrum extract with Freon 12 as the liquid gas carrier. This propellent Freon 12 was the most satisfactory chemical used during World War II as a propellent for aerosols to be employed in the presence of humans. Methylene dichloride appeared to be the most practical diluent of Freon 12 for insecticides. It is nontoxic to man, and is also noninflammable, and can be substituted for Freon 12 up to one-third of its weight.

Aerosols are used chiefly for such flying insects as mosquitoes, flies, gnats, sand flies, clothes moths and others in dwellings, factories, hospitals, aeroplanes, tents and similar confined areas. Aerosols are useless for the control of such crawling insects as lice, fleas, cockroaches, earwigs, caterpillars, as well as the various immature stages of most insects. It is not classified as a fumigant.

(2)—The Fog or Smoke Method of applying DDT in concentration of 2% or 3% proved quite effective for many purposes. The fog can be blown great distances and is quickly applied in barns, houses, tents and other buildings to kill adult flies, mosquitoes, gnats, sand flies and other insects. It has also been used to treat stadiums, parks, beaches and other large open gathering places to free them of these insects.

DDT is destructive to many kinds of beneficial predacious and parasitic insects when used as a contact or residual dust or spray. It may suppress the natural enemies of many insect pests and thus permit the latter to gain considerable headway and even require additional control measures. Thus, aphids often increase in great numbers as a result of killing the ladybird beetles, predacious bugs, green lacewings, brown lacewings, syrphid flies and the very effective hymenopterous parasites.

Investigations following the applications of DDT to forests and wild areas showed that pronounced mortality of wildlife resulted from the use of most of the higher concentrations of two pounds or over per acre.

Very extensive experiments with DDT in all fields of entomology were reported during 1945. The progress of this insecticide marked a great epoch in the history of entomology. The literature on the new chemical had already become very voluminous.

Ethylene dibromide: This insecticide is especially useful as a soil fumigant for the control of nematodes, garden centipedes, wireworms, white grubs and other subterranean plant pests. It appears to be particularly promising for

killing wireworms, but must be used on land free from growing plants.

Benzine hexachloride or 666: This insecticide had, to a much lesser degree, somewhat the same type of publicity in Great Britain as DDT had in the United States. However, it does not appear to be either as versatile or as effective as the latter, although it is quite similar in many respects and is effective in killing many insects. It appears to be less toxic to man and domestic animals. It is usually applied as a powder and is quite toxic to plant bugs, granary weevils and other insects.

Sabadilla: Sabadilla was further experimented with on a much larger scale during 1945. It was applied chiefly as a 5% or 10% dust or powder and proved toxic to many insects.

Orthodichlorobenzene: This new insecticide gave very effective results in the control of many household and stored-products insects as well as pests of fruit trees and many agricultural crops; it was used as a contact spray, as a solvent for aerosols and mixed with other insecticides.

Entomology in the Postwar Period.—At the close of the war with Japan on Aug. 14, 1945, an unprecedented rush of released U.S. servicemen to the universities and colleges began. Graduate students in entomology taxed the facilities of all the important entomological departments of the United States to the extent that a limit of numbers was necessary in some institutions.

After extensive experimentation for two years DDT was used on a large scale in 1946 for the control of insects attacking domestic animals and agricultural crops. Among the latter were the Japanese beetle, codling moth, lygus bug on alfalfa and beans, onion thrip, pea aphid, pea weevil in the field and many other important pests.

The Queensland fruit fly, Dacus ferrugineus tryoni, was first discovered in Honolulu, Hawaii, in 1946. (See also Agricultural Research Administration; Chemistry; Public Health Engineering.)

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Entomology and Plant Quarantine, Bureau of

See AGRICULTURAL RESEARCH ADMINISTRATION.

Enzymes

See BIOCHEMISTRY.

Epidemics and Public Health Control

In the period 1937–46, great strides were made in the control of many contagious diseases—advances which gave promise of control of several major infectious diseases which had been scourges of mankind for centuries.

Most of the important developments in the public health control of epidemic diseases were stimulated by World War II and its associated public health problems. These discoveries and others made in years previous to the war were quickly developed and applied on a large scale. Previously known control measures were intensified, and in many cases were improved and made more effective.

As a result of the use of new and improved public health, techniques, epidemics of contagious diseases such as had accompanied previous wars were prevented or minimized.

Among the most significant advances made during the decade was the development and application of the chemical DDT (dichloro-diphenyl-trichloroethane), as an insecticide. DDT was first prepared in 1874, and was not known to have insecticidal action until this was reported by a Swiss firm in 1939. Further experiments quickly demonstrated the great value of the chemical in the control of insect-borne diseases, and it was soon widely applied. Its effectiveness against the major world-wide epidemic diseases, such as typhus, malaria and yellow fever, which are transmitted to man by insects, made it one of the most important health weapons known to man.

Another great contribution which helped to reduce deaths from many contagious diseases was the discovery and use of the highly effective treatment agents, the sulfonamide and antibiotic drugs.

These drugs provided effective methods of treatment in many diseases for which no adequate treatment had been previously known, and supplemented or replaced less effective methods of treatment in other diseases.

The sulfonamide drugs were first discovered by chemists in the dye industry, and were later found to be useful in the treatment of a large group of bacterial diseases, such as pneumonia, epidemic meningitis and streptococcal infections.

New derivatives, which were more effective and less toxic than the original compound, sulfanilamide, were also developed. In 1929, Dr. Alexander Fleming had isolated the chemical, penicillin, from a mould. In 1940, this drug was used by Dr. H. W. Florey and his associates in the treatment of some human infections, and it was found



Volunteer allowing lice to feed on his back at the laboratories of the U.S. department of agriculture in 1943. The lice were placed on the host's back by means of cloth squares. This method was used to maintain a supply of lice for testing new insecticides for the U.S. armed forces

to be highly effective. This drug, and other antibiotics subsequently isolated from other moulds and soil bacteria, such as streptomycin, were important contributions to the treatment of many diseases.

The development and application of other drugs, such as atabrine in malaria and para aminobenzoic acid in typhus, were also important advances. The introduction and perfection of preventive vaccines during the decade made it possible to provide protection against the development of diseases such as influenza, typhus, whooping cough and yellow fever.

Although much progress was made, diseases such as diphtheria, malaria, syphilis and tuberculosis continued to present serious problems, and other diseases which had been relatively unknown to the medical profession were more widely recognized. (See separate articles on Infantile Paralysis; Tuberculosis; Venereal Diseases.)

Malaria.—Malaria, always one of the greatest world-wide public health problems, was especially important during World War II, when large numbers of troops were sent into areas where this disease was not adequately controlled.

The drastic reduction in the supply of quinine, because of Japanese occupation of areas where the drug was produced, made it necessary to find a substitute.

Atabrine, a drug which was previously used to a limited extent in malaria, was found to be effective as a substitute for quinine, and was extensively used by the armed forces in the control and treatment of the disease.

Malaria is a mosquito-borne disease. New methods of mosquito control, such as the use of DDT, were discovered and extensively applied to control mosquito infestation

in areas where malaria was endemic.

The use of these new and improved procedures throughout the world assisted in the struggle to bring malaria under control. In the continental United States, these methods promised to minimize or eliminate the possibility of spread of malaria from troops returning from overseas.

Typhus Fever.—Typhus fever had often become epidemic in periods of war. Although several outbreaks of the disease occurred during World War II, methods for control were available and widely used. Without these control measures, the disease might have become epidemic throughout the battle zones of Europe and Asia and would have claimed many more lives.

The first of the control measures was the use of vaccine for preventive inoculation. Troops entering areas where typhus was known to exist were protected by the use of this vaccine. In addition to preventive inoculations, it was found that DDT was an effective agent in typhus fever control. Application of this chemical, poisonous for the body lice which spread the disease, as a dusting powder to the clothing and body quickly eliminated body lice and thereby quickly stopped spread of the infection.

The effectiveness of DDT was demonstrated in an outbreak of typhus which was beginning to reach epidemic proportions in Naples, Italy, at the time of its occupation by the Allied forces. The immediate use by the U.S. occupation forces of DDT "dusting" brought the epidemic under control within a short period of time.

Diphtheria.—In many parts of Europe during the war years, diphtheria again became one of the most serious public health problems and assumed epidemic proportions in many places. The incidence and mortality of diphtheria in the United States, however, was maintained at a low level. This was attributed mainly to extensive adoption of immunization programs throughout the nation. A higher percentage of cases in adults than formerly occurred was noted during the decade 1937–46.

The material used for immunization was improved in efficiency during this period. The material called "plain toxoid," formerly used, was replaced almost entirely with a preparation known as alum-precipitated diphtheria toxoid.

Bacteriological studies of the diphtheria bacillus were continued, and it was found that human cases caused by a variety known as "gravis" type caused more severe, and more frequently fatal, illnesses than those caused by other types. Although preventive inoculations were known to provide a means of protecting children from the disease, it was discovered that subsequent reinforcing or "booster" injections were necessary to provide maximum protection.

Influenza.—Throughout the decade, epidemics of influenza occurred at two- to three-year intervals, but none approached the pandemic of 1918–19 in extent or severity.

The work of C. H. Andrewes, P. P. Laidlaw and T. Francis, among others, in isolating and identifying the viruses which are the causative agents of influenza, was continued and further progress was made. Several different varieties of influenza virus were isolated and identified.

A vaccine containing two types of influenza virus was used extensively by the army and navy during the war to reduce the incidence of influenza in troops, and good results were reported. This vaccine was made available for the civilian population in 1945, and evidence was obtained which indicated that it might prove to be of value in protecting the population against epidemics of the disease.

Measles.—A material known as gamma globulin, one of the protein fractions of human blood, was found to be effective for the prevention or lessening of severity of measles. This material, if given in the first week or so after exposure, could prevent the development of measles; or, if given later in the period before symptoms developed, would lessen the severity of symptoms, producing a "modified" measles.

Gamma globulin provided a material causing less reaction than "placental" globulin, which had been developed earlier. The use of this material helped reduce the number of deaths from measles and its complications.

Whooping Cough.—Much progress was made in the improvement of materials used for immunization against whooping cough. The work of Dr. Louis W. Sauer, Dr. Pearl Kendrick and others led to the development of much more effective vaccines. Increased use of these vaccines reduced the incidence of whooping cough in the United States.

To reduce the mortality from whooping cough in the early months of life, studies were carried out in which inoculations were given to infants in the first few months of life. On the basis of that study, early inoculations were recommended.

Material from blood containing protective substances against whooping cough also was developed. Evidence indicated that this serum might be of value in the treatment of the disease and might protect persons known to have been exposed.

Virus Encephalitides.—Outbreaks of disease in the United States and elsewhere characterized in humans by central nervous system symptoms, such as coma and paralysis, were intensively investigated. Laboratory methods showed that, although symptoms in the different outbreaks were similar, several distinct types of viruses were involved.

Investigation of the outbreaks led to the discovery that birds and animals also were affected by these diseases and might be the source from which human outbreaks began. Information was also found regarding the probable role of insects in carrying some of these diseases from these reservoirs of infection to man.

Tropical Diseases.—The advent of World War II brought into new prominence many tropical diseases, such as a "scrub" typhus, schistosomiasis, filariasis and dengue fever. Intensive investigation of the cause, means of transmission, and methods of treatment of these diseases during the war years made a striking contribution to public health control methods. Advances made as a result of the war research promised to be of great benefit in controlling these diseases.

Yellow Fever.—Yellow fever still presented a major public health problem in many tropical areas. No major epidemics of this disease, however, were known to have occurred during the ten-year period.

A number of important discoveries were made which led to improvement of control measures against yellow fever. Vaccine was perfected during the decade and was widely and successfully used among troops.

Field investigations carried out by scientists of the Rockefeller institute and others provided new information regarding the source and transmission of yellow fever. The ordinary type present in the urban areas of tropical countries was known to be carried by the Aedes aegypti mosquito.

In investigations of the disease in jungle areas where Aedes aegypti mosquitoes were not present, it was found that jungle mosquitoes were the means by which the disease spread. This discovery was of importance in the

control of jungle yellow fever, since the usual mosquito control measures were difficult to apply. Vaccine inoculation was necessary to control.

New Diseases.-Among the most important infectious diseases which were recognized for the first time during the decade or had been believed less widely spread, were those described below.

Evidence indicated that a virus or group of viruses was the cause of outbreaks of primary atypical pneumoniaresembling influenza and pneumonia-during the decade.

Infectious hepatitis was epidemic in groups of the armed forces throughout many parts of the world. The cause was not definitely established, but it was found that it could be transmitted by personal contact, and also by contaminated water and milk. Injection of small quantities of gamma globulin, one of the protein fractions of human blood, was found to be effective in preventing infection in persons known to have been exposed to this disease.

Keratoconjunctivitis causes inflammation in the coverings of the eye and, in a small percentage of cases, may leave opaque spots in the cornea, thereby causing more or less loss of vision.

Outbreaks which occurred in 1941 and 1942 in the United States may have been imported from Hawaii. The cause was found to be a virus.

Ornithosis, with symptoms like that of primary atypical pneumonia, is caused by a virus which in some cases appeared to be transmitted to man from pigeons.

Q fever, which had first been described in 1935 in Australia, was later found to exist in other parts of the world, and small epidemics were known to have occurred among troops in the Mediterranean area. Its cause was found to be one of the minute bacteria called Rickettsia. The method by which this disease was spread was not definitely established, and no effective means of control had been developed by the end of the decade.

Ringworm of the scalp, caused by fungi, appeared in epidemic proportions in the United States for the first time, so far as was known, about 1940. It was first observed in epidemic proportions on the Atlantic coast and later became more widespread throughout the United

It does not cause serious illness and in practically all cases disappears at puberty.

In addition to the diseases discussed above, other epidemic diseases, such as bacillary dysentery, epidemic cerebrospinal meningitis, pneumonia, scarlet fever and typhoid continued to present problems during the decade. Scientific investigations relating to the cause, means of transmission, control and treatment were carried out. The most notable advances made in medical knowledge of these diseases were in the development of more effective means of treatment:

(See also Bacteriology; Death Statistics; Entomology; PUBLIC HEALTH ENGINEERING.)

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Epilepsy
See Nervous System.

Episcopal Church

See PROTESTANT EPISCOPAL CHURCH.

Eritrea

See Italian Colonial Empire.

Espionage

See FEDERAL BUREAU OF INVESTIGATION; PSYCHOLOGI-CAL WARFARE.

Estonia

From 1918 to 1940, when it was incorporated in the U.S.S.R., Estonia was an independent republic on the Baltic coast, bounded on the east by the Narva river and Lake Peipsi, on the south by Latvia, and including the Baltic islands of Saaremaa, Hiiumaa and Muhamaa. Covering an area of 47,559 sq.km. or 18,363 sq.mi., Estonia had in 1939, a population of 1,133,940 of whom 88.2% were Estonians, 8.5% Russians, 1.2% Germans (Balts) and 2.1% other nationalities. Estonia was therefore the most homogeneous state in eastern Europe. Chief towns: Tallinn (cap. 145,000); Tartu (60,100); Narva (24,200); Pärnu (21,500).

The Estonians are neither Slavs nor Teutons. They are members of the Ugro-Finnish race, and the Estonian language is closely related to the Finnish and remotely to the Hungarian. Their religion is predominantly Lutheran (78%); there was a 19% minority of Orthodox Christians

Konstantin Päts was president of the republic and prime minister from Oct. 21, 1933; on May 6, 1938, he appointed as prime minister Kaarel Eenpalu, and on Oct. 12, 1939, a coalition government under Jüri Uluots. On June 18, 1940, the Russians appointed as prime minister Johannes Vares (Max Unt). On Aug. 6, 1940, when Estonia "joined" the U.S.S.R., Vares became chairman of the praesidium of the supreme soviet of the Estonian S.S.R. His death was announced from Moscow on Dec. 1, 1946.

Two Short Decades of Independence.—On Feb. 24, 1987, the Estonians were celebrating the 19th anniversary of their independence. They had every reason to rejoice, for by comparison with any other period in their history these years had been a golden age. Seven centuries before, their ancestors had been conquered by the Teutonic Knights, who treated them as an inferior race, making them hewers of wood and drawers of water for a German ruling class. In 1625 Sweden assumed suzerainty over Estonia, and in "the good old Swedish days" the Germans' privileges were somewhat restricted; but after 1710, when the Russians succeeded the Swedes as sovereigns, the Estonians were subject to a double bondage-to the tsarist officials and to the Germans who were still the landowners and practical masters of the country. Not till after 1917 were the bonds broken. After a terrible and manysided fight, against reich Germans and against local Germans (Balts), against tsarist Russians and against bolshevik Russians, the Estonians, led politically by Konstantin Päts and militarily by Johan Laidoner, achieved their independence.

Looking back from the vantage point of 1937, the Estonians might well be satisfied with their achievement. Without any experience of self-government, they had established a republic with all the civil liberties and representative institutions of the old democracies of the west.

They had established a system of public education that could compare well with any in the world; 1 in every 340 of their people was going to Tartu university. With every experience of racial intolerance and neighbourly ill-treatment, they had been tolerant at home and good neighbours in foreign policy. The German Estonians (Balts) had been dispossessed of most of their land but not otherwise victimized; like other racial minorities, they enjoyed full civil liberties and had officially-chartered organizations for the conduct of their own cultural life. As a member of the League of Nations, Estonia had fulfilled all its obligations; it had indeed been the only country to pay interest on a League loan promptly and in full. With its Russian neighbour, it had signed a non-aggression pact in 1932. Without any experience of economic independence, the Estonians had established a social democracy, dividing the land among peasant-proprietors so that the average Estonian was a landowner working a holding of 12.4 to 124 ac. with the labour of his family and a couple of horses. Under this system, productivity per man and per acre increased enormously. A network of peasant co-operative societies spread until it achieved a monopoly of the butter and milk trade. Exports of dairy and timber produce were developed with the west, and industries were founded for processing agricultural products and wood and for textiles and shale-oil. By any comparison with its Russian neighbours or with its own past, Estonia was a prosperous as well as a free country.

Yet the years before 1937 had not been without their misfortunes. To cope with the falling agricultural prices and unemployment of the world economic crisis of the early 1930s, strong government action was necessary, and that was impossible under the Estonian constitution of 1920 which left the executive at the mercy of a multiparty house of parliament. The obvious way out was to adopt a new constitution which would give sweeping powers to a president. A proposal to this effect was accepted by referendum in 1933, but the lead in this was taken by an ugly organization known as "Vaps" (Vabadus Sõjaleste Liits or Ex-Service Men's league) which smacked all too clearly of naziism. Rather than risk the election of a "Vaps" nominee as president, Päts, the acting head of the state, assumed supreme power in 1934 and appointed Laidoner as commander-in-chief. From 1934 to 1937 Päts ruled as a benevolent dictator, popular because of his government's help to industry and agriculture and because of the mildness of his restrictive measures. In 1936 his proposal for a constituent assembly consisting of two chambers was accepted by referendum. The new chambers met in Feb. 1937.

Their task was to draw up a new constitution which would strike a balance between the excessively libertarian constitution of 1920 and the excessively authoritarian document of 1933. In this they succeeded. The constitution of 1937 apportioned power by subtle checks and balances between two houses of parliament and a president.

The elections of April 1938 returned Pats to the presidency.

Estonia had won its way back to constitutional democracy, surmounting the difficulties of the mid-1930s with less difficulty than most of the older states of Europe. The new regime was a success. Prosperity increased in every class, particularly among the agriculturists (67% of the population), whose net farm income was 10% higher in 1939 than its pre-crisis level. The only serious complaint of the



"While the Sun Shines." This cartoon by Little of the Nashville Tennessean was drawn after Russia completed the first of its series of dictated Baltic pacts—with Estonia on Sept. 29, 1939

opposition, led by Liberals like Jaan Tönisson and Ants Piip, was that rights of assembly and of press freedom, though guaranteed by the constitution, were a dead letter. Pats's reply was that the international situation made restriction necessary.

Germany's advance to the east, culminating in the annexation of Memel, Lithuania, in March 1939, was potentially a menace to Estonia. Russia's declaration, immediately after the Memel seizure, that Latvia and Estonia were part of the Russian sphere of vital interest was also a menace. The Estonian policy was to give no allegiance to any great power, hoping that through blameless neutrality its independence might be preserved. It already had a non-aggression pact with Russia. In June 1939 it signed a similar pact with Germany. When Russia, replying to the British request to join in guaranteeing Poland and Rumania, insisted that Finland and the Baltic states be included in the guarantee, Estonia, like the others, refused, and the British did not urge it to accept. But the pact between the U.S.S.R. and Germany on Aug. 23, followed by the German and then by the Russian advance into Poland, left Estonia isolated from the west, and when Vyacheslav Molotov presented the Estonian foreign minister Kaarel Selter with a pact of mutual assistance he had no alternative but to sign. This pact of Sept. 29 gave Russia naval and air bases in Estonia. The Estonian's only consolation was the undertaking given in Article V: "The realization of this pact should not affect in any extent the sovereign rights of the contracting parties, in particular their economic systems and state organization."

The next nine months were a parlous but not a bad time for Estonia. Russia made war on the Finns for refusing to sign a similar pact. Hitler sent agents to persuade the German minority to leave Estonia, and some 15,000 of them obeyed. The Baltic being closed, Estonia had to divert its exports to Germany and to Russia. But the

Russian troops in Estonian territory were unobtrusive, and there was no interference with Estonia's internal affairs. Under a new coalition government, led by the Agrarian Jüri Ulnots and the Liberal Piip, the tempo of domestic reforms increased and the cultural and economic bonds with Latvia and Lithuania were tightened.

Into the Maelstrom.—Then, suddenly, on June 16, 1940, the whole situation was changed by an ultimatum announcing that Russia would occupy Estonia. Latvia and Lithuania received similar ultimata.

Tanks and troops of the Red army arrived in Tallinn, tollowed by the soviet supreme councillor Andrey A. Zhdanov. There was nothing for President Pats to do but accept a new government of Zhdanov's nominees. These were not Russians but Estonian literary men of the extreme left, headed by the poet Johannes Vares.

Vares announced on July 5 that new elections would be held on July 14 and 15. This was a violation of the Estonian electoral law, and the procedure for the election was a violation of all decency. No candidate was allowed to stand unless nominated by a newly-created "Working People's Union"; all other candidates including Tönisson, the grand old man of Estonia, were arbitrarily disqualified. The electors, dragooned by Russian troops and offered no alternative list of candidates, were said to have voted for the official list by 97%. There was no check on the vote-counting, and the Russian news-agency announced the result before the close of the poll.

During the period of the election, not a word had been said about any change in Estonia's independent status, but when the new assembly met on July 21-at the same time as similarly "elected" assemblies in Latvia and Lithuania-the first motion was that Estonia should join the U.S.S.R., which was carried by show of hands. No one in the outside world had any doubt as to what was happening. The acting secretary of state of the United States announced on July 23: "During the last few days devious processes, by which the political independence and territorial interests of the three small Baltic republics were to be deliberately annihilated by one of their more powerful neighbours, have been rapidly drawing to their conclusion." The conclusion came on Aug. 6, when the supreme council in the Kremlin accepted Estonia's admission into the U.S.S.R.

A reign of terror followed. All the best known public men-including Päts, Laidoner, Ulnots and Piip-were taken into captivity in Russia. Nearly 60,000 Estonians, leaders of public opinion, political, intellectual and religious, with their wives and children, were killed, imprisoned or deported. Education was put under communist control. Religious teaching and broadcasting were stopped; the faculty of theology at Tartu was closed, the Salvation Army dissolved, the Petseri monastery turned into a Russian barracks. Industry and urban house-property and land were "nationalized." The co-operative societies were "purged." No citizen was left with any securable legal rights, and the presence of the Red army and N.K.V.D. (Russian political police) made opposition impossible, except in the forests, where thousands of young Estonians went into hiding.

On June 22, 1941, Hitler invaded Russia. The German panzerdivisionen went through the Russian defenses in Lithuania and Latvia without difficulty, by-passing Estonia and cutting off the Russian forces, which had to flee by sea from Tallinn. The Estonians neither resisted nor welcomed the Germans. After a year of Russian occupation they were convinced that nothing could be worse than Russian rule, but they had enough historical experience

of Germans to know that German rule would be but little better. The Germans could find no collaborator better known than an obscure Dr. Hjalmar Mae, an old Vaps man. They made Estonia a zone of the new German province of Ostland. They did not restore the private property which the Russians had nationalized, but retained it on the ground that since the Estonia they had conquered was part of the soviet union (Germany had been the only state to recognize the soviet incorporation), soviet state property became German state property. They put in their own nominees to run the co-operative societies. They drove men out of employment so as to leave no alternative but enrolment in German labour battalions or armaments work.

For three years Estonia was under German occupation, impoverished, dragooned and dispirited. By Feb. 1944 the Russians were back on the Narva front. In alarm the Germans forced more and more Estonians into military

Estonia Statistical Data, 1938

14	Value II	Amount or
ltem	(000 s omitted)	number
Exchange rate United States		1 Kroon = 27 cents
Great Britain		18.16 Kroons = £1
Finance		
Government revenues	\$29,920 (£6,120) \$26,886 (£5,400)	• • •
Gold reserves	\$13,930 (£2,849)	• • •
National debt	\$26,886 (£5,499) \$13,930 (£2,849) \$31,548 (£6,453)	•••
Transportation		
Railroads		875 mi 12,343 mi *
Navigable waterways (rivers).		122 mi.
Communication		
Telephones		25,055
Minerals		55,086
		154,322 tons
Shale oil		1 <i>5</i> ,339 " 14,330 "
Natural phosphates		14,330 "
Crops Potatoes		1,099,654 "
Root crops (fodder)		264,552 "
Rye		207,232 "
Barley		194,556 " 106,592 "
Livestock		
Poultry		1,596,570
Cattle		660,890 649,730
Swine		384,580
Forest products		
Total		54,838,081 cu. ft. 20,470,136 "
Logs		15,383,714 "
Pulpwood		15,383,714 " 7,292,323 "
Sea products Total		16,954 tons
Baltic herring		9.436 "
Killo		1,483 "
Perch-pike		474 "
Manufactures Total	\$44.884† (£9.181)	• • •
Textile	\$12,805† (£2,619)	•••
Wood and paper Food and beverage	\$9,113† (£1,864) \$7,196+ (£1,472)	•••
Engineering	\$44,884† (£9,181) \$12,805† (£2,619) \$9,113† (£1,864) \$7,196† (£1,472) \$4,459† (£912)	•••
Exports—Total	\$28 OA1 (£5 740)	•••
Butter	\$6,791 (£1,389) \$2,745 (£561) \$2,594 (£531) \$1,672 (£342)	•••
Wood and paper	\$2,594 (£531)	•••
Flax and flax fiber		
Imports—Total	\$28,943 (£5,920) \$1,901 (£389)	•••
Iron and steel	\$1,673 (£342)	•••
Fertilizers	\$1,673 (£342) \$1,157 (£237) \$1,054 (£216)	•••
Sugar	\$1,054 (£216)	• • •
Defense Standing army personnel		11,400
Reserves		108,600
Standing navy personnel Standing air force personnel .		1,600 540
Military expenditures	\$4,995 (£1,022)	340
Education		
Elementary schools		1,224
Middle schools		58 39
Agricultural schools		30
Tartu university students	11.027	3,219
*1939	†1937	

service: about 17,000 had been called up in 1943; another 48,000 were forcibly mobilized in 1944. In the summer the Russians' break-through came, and the Germans were in retreat. In the confusion, tens of thousands of Estonians succeeded in fleeing the country, by sea to Sweden if at all possible or by land into Germany, where they hoped to meet the forces of the western powers and so be safe from the Russians. In Tallinn a national committee of patriots led by Dr. Otto Tief, an ex-minister of justice, emerged from underground as the Germans were leaving the capital and on Sept. 20 flew the national flag from the citadel and proclaimed Estonia to be independent again. Two days later the Russian troops reached Tallinn.

With the restoration of the soviet republic again, tens of thousands of Estonians were deported to Russia. In their place came tens of thousands of settlers from the east. This time Moscow seemed determined not only to bolshevize Estonia but to russify it. It was announced that Tallinn was to be extended to house 500,000 people; its pre-war population had never exceeded 150,000 and the increase could come only from non-Estonian immigrants.

The Moscow government made great efforts to secure the return of Estonian refugees to the union. But of the 30,000 in Sweden and of the 50,000 in western Germany, only a handful would consent to go back. The free, highly cultured and prosperous Estonia of the years of independence had gone; in its place was something to which they did not wish to return. Yet they lived in hope that most of the nations of the world, including Britain and the United States, had not, even by the end of 1946, recognized the soviet incorporation of Estonia; to them Estonia was still de jure an independent republic.

(J. H. JN.)

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Etching

The period immediately preceding the outbreak of World War II found etching, as a medium of original pictorial expression, either taking root or already flourishing in the art life of nearly every civilized nation. First centred in Germany and the Low Countries in the 16th and 17th centuries, the principal interest and activity in the medium on the part of creative artists shifted to Italy in the 18th century and to France in the 19th.

Continental Europe.—By 1937, the beginning of the period covered by this article, the great school of French etching had come to a close with the deaths of F. H. Buhot, A. Lepère, and J. L. Forain, but interest in the medium had been carried on by such accomplished practitioners as A. M. Beaufrère, E. Béjot, J. P. V. Beurdeley, A. Brouet, R. Dufy, A. Féau, J. E. Laboureur, M. Laurencin, H. Matisse, A. A. M. D. Segonzac and others. Their places were gradually being taken by a group of younger men and women who were turning

more and more to line engraving as a medium, and to book illustration as a field of graphic expression. The light of etching still burned brightly in France, the country which had made such a rich contribution to the art in the past, right up until 1939. Then came the great catastrophe and the light went out, here as elsewhere in Europe, or was kept alive only by the devoted few under cover of the darkness that followed. Throughout the period of the war, publication and distribution were impossible and little, if any, news of what living French etchers were doing reached the rest of the world. Upon the cessation of hostilities, however, they emerged from the obscurity in which they had been living and working and, in the fall of 1945, there was held in a Parisian gallery a comprehensive showing of the work of such well-known artists as J. P. V. Beurdeley, J. Boullaire, J. Frélaut, P. Guastalla, A. Jacquemin and J. Villon. The first large group of contemporary French etchings to reach the outside world was taken to the United States at about the same time; it was shown by invitation in the Thirtieth Annual Exhibition of the Society of American Etchers, and included prints by H. G. Adams, Y. Alix, E. Cournault, J. Deville, A. Gross, J. Hecht and C. Walch. These artists were members of "La Jeune Gravure Contemporaine," under the presidency of J. Hecht.

After the 18th century etching steadily declined in Italy and from the beginning of the 19th until the entrance of that country into World War II little of significance was done in this field, although A. Carbonati, E. Mazzoni-Zarini and F. Mauroner produced prints which, in their honesty of conception and competence of execution, preserved what remained of the great tradition of Italian etching. During and after World War II nothing came from that strife-torn land. The enforced discontinuance of the biennial exposition at Venice denied to the outside world knowledge of all art production within.

Nor was the decade 1937-46 eventful as far as Spanish etching was concerned; in fact nothing of importance had been done there since the sparkling prints of the 19th century master, M. Fortuny. Such incursions into the field of etching as were made by P. Picasso were to be identified rather with France than with the land of his birth. During the years 1937 and 1938 a few prints came from the hands of J. Komjati, Hungarian master resident in Budapest, and a number of his fellow countrymen of lesser note produced work, but no etching of national note. The same was true of Poland, Czechoslovakia and the Scandinavian countries, although considerable work of great competence, if not distinction, was executed in Sweden both immediately preceding and during the war. Russian graphic artists concentrated their attention for the most part on the relief process of woodcut.

The last etchers of prominence to work in the Netherlands and Belgium in the early decades of the 20th century were M. A. J. Bauer, C. S. van 'sGravesande, J. Israels, M. Maris, J. Poortenar and W. Witsen, after whom the little that was done was under the yoke of nazi Germany and did not reach outside the immediate confines of its production. In the last-named country original etching died with M. Liebermann and K. Kollwitz, the latter one of the great graphic artists of all time and sharing, with Mary Cassatt, pre-eminence among women in the field of etching. P. Halm, M. Klinger and H. Wolff carried on in a lesser way, but creative art was doomed from the first under nazi rule and the period under discussion was completely barren except for such of the work of the artists mentioned as survived. Until individual freedom

of thought and action returned to all countries contaminated and enslaved by nazi and fascist influence there could be no original and vital form of art expression.

Latin America.—Throughout the decade 1937–46, Latin-American art flourished, encouraged by the closer integration of the countries of the western hemisphere, particularly with the United States. In the latter country the Inter-American Office of the National, Gallery of Art was active in stimulating mutual exchanges, as was also the American National Committee of Engraving. Etching never flourished south of the Rio Grande, however, the woodcut and the lithograph having been the most popular graphic media. Some work on copper was done, nevertheless, by artists in Mexico, Uruguay, Argentina and Venezuela, though it bore much more the stamp of foreign influence and much less of the native verve displayed by the other media, particularly wood.

British Empire.—Canada and Australia, on the other hand, produced much etching of real interest and vitality in spite of the limitations and exigencies of wartime demands. From 1937 to the conclusion of the war, the principal print society of the former, the Society of Canadian Painter-Etchers and Engravers carried on with little diminished activity under the stress of circumstances and the pressure of hostilities. Among consistent producers and exhibitors in Canada were W. K. Aykroyd, J. J. Barry, I. Cleland, W. F. G. Godfrey, N. Hornyansky, J. S. Inglehart, W. P. Lawson, I. Mackinnon-Pearson, H. D. Martin, W. K. Peacock, O. Staples, F. B. Taylor, C. J. Travers, H. D. Wallace, P. Whalley and W. J. Wood, covering most of the better-known graphic media. So, also, elsewhere, the Printmakers Society of Honolulu held annual exhibitions through the war.

It is worthy of note that, in spite of the conditions of unrest that prevailed in India, the veteran Mukul Dey, leading exponent of the etcher's art there, published new prints.

Great Britain.—With the ending of the 19th century, the great period of French etching, and the beginning of the 20th, the centre of activity in the medium was transferred to England and, later and increasingly, to the United States.

During the ten years 1937 to 1946, it is a safe generalization to say that the greatest number of outstanding etchers belonged to the two great English-speaking countries, and by far the greatest number of prints with any claim to survival as works of art of enduring beauty and significance were produced by them.

It is a tribute to the morale and high courage of the British artist that, in a country fighting literally for its very existence and with its manpower exhausted by the demands of the most exacting and terrible conflict in world history, he was able somehow to keep alive and even create a very considerable volume of art, and that his production was, considering the almost impossible conditions under which it came into being, of a surprisingly high order of merit. Throughout those chaotic years the Royal Academy and the Royal Society of Painter-Etchers and Engravers, the two leading agencies for the display of etchings to the British public, held their exhibitions, attracted large crowds, and distributed many prints. Print galleries, bombed out of their old locations, with members of their staffs killed or wounded and their stock depleted, opened in others. By far the greatest contribution of British etching to the history of this ancient and honourable art during the ten eventful years beginning in 1937, and by far the greatest contribution that could be made to it in any land, by any people,

was the undying proof to the world that art, as represented by the production and appreciation of pictures conceived with sincere spiritual feeling and executed with a high degree of technical skill, is a necessity and not a luxury in human life, even when that life is threatened with extinction.

At the time this period opened, four of the modern masters of etching were living and working in the British Isles, albeit the oldest of the four, Sir David Young Cameron, was comparatively inactive due to advanced age. The other three, Sir Muirhead Bone, James McBey and Frederick L. M. Griggs, were still in their full powers. Sir Muirhead Bone is included in the group by virtue of the close relation between dry-point, the medium he made so completely his own, and the acid bitten line which is, in the strictest sense of the word, the true etcher's medium. During the decade, Cameron and Griggs died, leaving behind them in their prints rich legacies of beauty and inspiration for artists and laymen alike. Few modern etchers had approached them in the nobility of their conceptions, the wealth of their imagination or the perfection of their execution.

Two other noteworthy figures in British etching, and therefore in all contemporary graphic art, were also lost through death during the period-Sir Frank Short and Arthur Briscoe. The former, a distinguished etcher, a great mezzotint engraver and probably the most versatile and accomplished technician in the fine print media of modern times, was for many years president of England's leading print society, the Royal Society of Painter-Etchers and Engravers, succeeding the founder and first president, Sir Francis Seymour Haden, and as such and by his teaching at the Royal College of Art, exercised a more far-reaching influence on the direction of the art of etching in England in modern times than any other man. Briscoe, who had been a professional sailor in his earlier years, took up etching comparatively late in life at the instigation of James McBey and, by reason of his years before the mast, his intimate personal knowledge of the sea and of sailing ships and his great natural abilities as a draughtsman, became the leading marine etcher of his day, with the American, Charles H. Woodbury, as his only rival. He died in 1943.

From the outbreak of World War II, Sir Muirhead Bone placed his great powers as a draughtsman, particularly in the interpretation of structural subjects, and his unrivalled skill as a master of dry-point at the disposal of his government and spent the period of the war, as he had during World War I, making drawings of its stupendous effort both in the military and industrial fields. The products of his needle were not made public during the wartime years.

This period marked the full flowering of another modern British master of etching, Gerald Brockhurst, whose personal and individual renditions in the field of portraiture, executed in a minute and flawless technique in which, however, breadth of feeling was never lost, entitled him to a high rank among all British portraitists. He eventually transferred his citizenship to the United States where in 1946 he was living and working in New York city. Shortly before that time James McBey had done the same thing so that of the foremost etchers in England at the beginning of the decade, Sir Muirhead Bone alone remained there in 1946. To fill the great gaps left by their demise or transfer to other lands, however, other outstanding figures remained or had arisen. Conspicuous

among these were H. G. Rushbury (the bulk of whose work was in dry-point) in the field of architectural interpretation and F. Dodd in portraiture, both sensitive artists and technicians of the first order. Other prominent etchers and regular exhibitors were S. Anderson and G. Wedgwood, both working increasingly with the burin, W. W. Austen, K. Cameron, W. D. B. Davis, P. D. Drury, W. R. Flint, H. A. Freeth, S. Gosse, M. Hardie, S. Lee, W. W. Manning, J. Nicholson, M. Osborne (president of the Royal Society of Painter-Etchers, succeeding Sir Frank Short), W. P. Robins, S. Sproule, L. Squirrel, I. Strang, R. Tanner, E. Taylor, S. van Abbe and W. Washington, the last-named equally identified with line engraving. The veteran E. Blampied continued to produce fine etchings at intervals, though turning more and more to the medium of lithography.

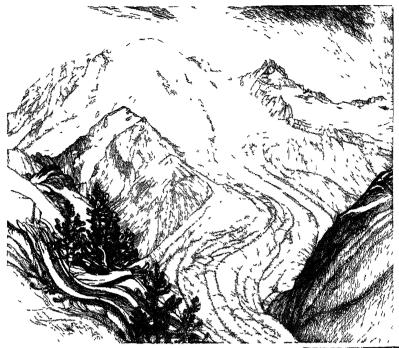
Thus we see that with its great tradition of craftsmanship and the dual advantage of the best schools and most accomplished professional plate printers in the world, English etching carried on through the ten eventful years with remarkable success, in spite of almost insuperable difficulties. Always adhering to traditionalism and little affected by external influences, it found few supporters among the exponents of the so-called modern movement in art. If this reactionary attitude toward contemporary feeling sometimes resulted in a certain sterility and repetitive quality, it nevertheless tended to preserve and strengthen the basic standards, both of feeling and craftsmanship, that have governed the greatest exponents of the art of all periods and all lands, and served to conserve and hand on to future generations the highest traditions of the art as established by the masters of the 16th and 17th centuries.

United States.—With the outbreak of World War II, what we may roughly term the second period of American etching came to a close. The significant beginnings had been in the hands of O. H. Bacher, R. F. Blum, F. Duveneck, R. S. Gifford, the three Morans (Peter, Thomas and Mary Nimmo), S. Parrish, C. A. Platt, J. D Smillie, Dr. L. M. Yale and J. A. McN. Whistler. Of these, Duveneck was a real master and Whistler, though his life and work were identified with England, France, Italy and Holland, rather than with the United States, was one of the supreme etchers of all time. These pioneers had been succeeded, and their art ably carried on, by D. S. MacLaughlan, C. F. W. Mielatz, J. Pennell, A. Sterner, C. Washburn and H. A. Webster, and by F. W. Benson, G. E. Burr, S. Chamberlain, H. N. Cook, A. B. Davies, K. Eby, S. Gallagher, A. C. Hansen, E. Haskell, F. C. Hassam, A. W. Heintzelman, E. Higgins, A. Landeck, A. A. Lewis, M. Lewis, R. Partridge, E. D. Roth, C. F. Ryder, H. Wickey, J. W. Winkler, F. T. Wood, C. H. Woodbury, G. H. Wright and M. M. Young. Among these names were to be found those of all the modern masters of American etching, of whom a considerable number were still producing work when the period opened. Some, as Chamberlain (returned from distinguished military service overseas), Eby, Heintzelman, Higgins, M. Lewis and Roth, were still doing so at the close of the period. Many other etchers were active, their work representing various tendencies and schools of thought from the most traditional to the most abstract, covering every field of subject matter, and stimulated by the ever-increasing public interest in the art as evidenced by the steadily augmented number of print exhibitions, galleries and societies. So great was the response of American artists at this time, in spite of the demands made by war, to the appeal of etching as a medium of original graphic expression, that to enumerate all the serious workers in the medium would be to exceed the confines of this article. The following were, however, most in evidence: N. Y. Andersen, J. G. Bettelheim, I. Bishop, L. S. Bobleter, H. Botts, C. Botke, P. Cadmus, the accomplished lithographer F. Castellon, J. E. Costigan, L. C. Daniel, R. Fabri, I. Friedlander, S. Fuller, D. W. Gorsline, G. Grant, E. M. Grossman, I. D. Hoffman, I. Hugo, the veteran A. H. Hutty, G. Kloss, L. Kupferman, H. A. Loggie, L. Lucioni, J. Margulies, B. McVeigh, H. Miller, A. Ostrowsky, M. Petersen, F. Rocker, W. Sharp, E. H. Sherman, R. H. Weidenaar and K. S. Williams. Also risen to positions of prominence in American etching were S. Csoka and C. M. Schultheiss, the latter equally accomplished as a line engraver, while S. W. Hayter and his students and followers of Atelier 17 which he had brought from Europe produced many etched designs of great beauty in the so-called abstract idiom.

Looking back on the years detailed by this article, it may be said that the influence of etching as an independent creative art increased and spread rapidly throughout the United States. Its growth was fostered by the regular annual and travelling exhibitions of the three principal professional print societies, the Society of American Etchers in the east, the Chicago Society of Etchers in the middle west and the Printmakers Society of California in the far west, as well as by numerous other smaller ones all over the country; by the print exhibitions sponsored by the National Academy of Design and the American National Committee of Engraving; by the comprehensive annual showing of prints at the Library of Congress in Washington under the aegis of the Pennell Fund committee; and by the activities of the Work Projects administration while it was in existence. On Dec. 7, 1942, the first anniversary of Pearl Harbor, the Metropolitan Museum of Art in New York city opened its doors on the largest and most comprehensive exhibition of prints ever held in the United States, under the auspices of Artists for Victory, a national association established at the outset of the war to place at the disposal of the government the services of the artists of the country. This exhibition numbered 578 works by 414 artists, representing nearly every state in the union and including the District of Columbia and Hawaii. The same organization brought together in 1943 a small but representative exhibition of contemporary American fine prints to send to England in exchange for a similar British group sent to the United States in 1944 under the aegis of the Central Institute of Arts and Design. An encouraging feature in the growth and development of art in general in the United States, and therefore, specifically, of etching, was the fostering of closer relationship and understanding between art and industry. Each had much to give the other and it was to the vision and broadmindedness of such men as Thomas J. Watson, president of the International Business Machines corporation, and Francis Henry Taylor, director of the Metropolitan museum, that the encouragement of such a union was due.

Lastly, in connection with etching in the United States, it may fairly be stated that in the decade reviewed a distinct and characteristic national school became established. With every phase of human life represented, with boundless resources of natural beauty and inspiration at hand, and with the mixture of races and traditions in the

¹The author modestly refrains from including his own name in this or the following listing. [EDITOR]





Above: Copper etching by Roi Partridge entitled "Glacier" (Mt. Rainier, Wash.)

Upper right: "Lancaster County Farmer," a dry point by Arthur W. Heintzelman



Above: "Romanian Gypsy with Child," etching by Carl M. Schultheiss



Left: "The King Goblin," etching by Helen A. Loggie

population, it was natural that the art of the nation and, because it is the most democratic of all forms, the art of the printmaker, should partake of all tendencies, all classes of subject matter, all means of expression, welded together into one related whole and nourished and quickened by the vitality and energy of a young nation. If the blending was not complete in 1946, it was far more so than in 1937. As proof it may be pointed out that instead of the great number of refugee artists who travelled to the United States from all over the world, imposing their ideas and their techniques on American art, they became speedily absorbed into it.

* * *

GENERALLY, the decade saw an increase of practitioners of the ancient and beautiful art of etching, with a corresponding enlargement of interest on the part of the general public, in spite of the fact that for practically the entire period the civilized world was plunged in the most terrible war in human history.

(J. T. Ar.)

Ethical Culture Movement

A religious and educational movement emphasizing the centrality of ethics in human relations, the Ethical Culture movement was started in New York city in 1876 by Felix Adler, and was established ten years later in London by Stanton Coit. In 1946, societies were active in New York city, Westchester, Brooklyn, Philadelphia, St. Louis and Chicago, and groups were meeting regularly in Washington, D.C., South Orange, N.J. and Los Angeles. There were four societies meeting in London (one conducted in the French language) and one in Birmingham, England. Contact had been re-established with the remaining members of the Vienna society which, as was the case with the Berlin group, had been suppressed by the nazis.

The Ethical Culture societies conduct Sunday and week-day services and a variety of educational and community activities. University Settlement, the first neighbourhood house in the United States, was an enterprise of the movement, which was also responsible for significant efforts in child labour reform, visiting nurse associations, legal aid societies, housing, race relations, child study and progressive education. Considerable literature dealing with the autonomy of ethics and the religious nature of ethical dedication was produced.

From 1937 until the beginning of World War II, U.S. and English societies alike were deeply concerned with assistance to refugees from nazidom. Special attention was given, in conjunction with instruction in English and through comprehensive series of lectures, to familiarizing individuals with the new cultures in which they found themselves. In this same period, contributions to the democratic orientation of the developing work-camp idea were made through the establishment of Associated Junior Work Camps and Work Camps for America. Throughout the war period, in addition to service activities, the Ethical Culture societies devoted themselves to extensive programs of adult education, spearheaded by the creation of the John L. Elliott Institute in New York. They were also actively concerned with fuller realization of Negro rights, problems of atomic power and public policy and improvement of the public school system. The Conference on the Scientific Spirit and Democratic Faith, founded in 1943 under the honorary chairmanship of John Dewey, held its annual sessions at the meeting house of the New York society. The movement celebrated its 70th anniversary

with a series of conferences on educational, labour-management and international problems. The observance culminated in the creation of the first Encampment for Citizenship, drawing together from all parts of the United States young people of diverse backgrounds who during the summer of 1946 lived and studied together on the campus of the Ethical Culture schools in New York.

George E. O'Dell continued as secretary of the American Ethical union but was succeeded in 1946 by Ralph Toledano as editor of *The Standard*, published each month at 2 West 64th Street, New York, 23, N.Y. The American Ethical union, of which Robert D. Kohn was president, had offices at the same address. The offices of the English Ethical union, of which John Laird was president and H. J. Blackham executive secretary, were at 4A Inverness Terrace, London W2.

BIBLIOGRAPHY.—Exposition of the movement's principles was to be found in Felix Adler's An Ethical Philosophy of Life. Among publications by various leaders after 1937 were: Ethical Religion: Its Basis and Possibilities (a symposium); Horace J Bridges, Humanity on Trial and Some Applications of Ethical Religion; W. Edwin Collier, Phases of Ethical Fath; A Eustace Haydon, Biography of the Gods; David Saville Muzzey, Ethical Religion and Ethical Imperatives; Jerome Nathanson, Forerunners of Freedom; and V. T. Thayer, American Education under Fire. (J. NN.)

Ethiopia

An ancient empire of northeast Africa, Ethiopia is bounded north by Italian Eritrea, west by the Anglo-Egyptian Sudan, south by Kenya, southeast by Italian Somaliland and east by British and French Somaliland. Area: c. 429,845 sq.mi.; pop. (Italian est. 1939) 9,450,000; (Ethiopian est. 1946) 15,500,000. After their conquest of Ethiopia in 1936, the Italians estimated that about onequarter of the population were Ethiopians or Amhara and about half were Galla. Chief towns: Addis Ababa (cap., 1946 est., 300,000); Diredawa (1938 est., 30,000); Harar (25,000); Gondar (22,000). Languages: Gueze or Ethiopic, obsolete except in liturgy; Amharic, the official language; also Tigrinya, Tigre, Galla and Somali. Religion: Christian (Copt) and Mohammedan. Ruler: Emperor Haile Selassie I; prime minister: Betwodad Makonnen Endalkatchaw (appointed May 1941).

Exile.—Ethiopia was advancing rapidly in civic progress when the Italians invaded the country, without provocation, on Oct. 3, 1935. The condemnation by the League of Nations voted by 52 member states, and subsequent sanctions, proved no deterrent. The Italians massed powerful forces in their colonies, Eritrea and Italian Somaliland. By lavish use of poison gas they gained victory and succeeded in entering Addis Ababa, on May 5, 1936. The Emperor Haile Selassie I, his family and ministers had already left the capital on May 3 for Jibuti, where they were embarked on a British warship. The emperor, in a moving speech, placed Ethiopia's case before the League of Nations. During the following years he kept its cause before the world public opinion by every means in his power. Resistance in Ethiopia was continued by patriot forces. On Feb. 19-21, 1937, by order of Marshal Rodolfo Graziani, the Italian governor, about 30,000 people were massacred in Addis Ababa, and also large numbers in other towns. By 1938 most European governments had recognized the Italian conquest, but the patriots continued their resistance.

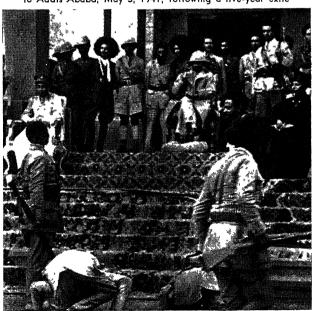
Liberation.—When Benito Mussolini entered World War II on June 10, 1940, the patriots were active throughout Ethiopia, having equipped themselves with captured Italian arms. The emperor immediately approached the British

government, requesting facilities to fight for the liberation of his people, and offering full co-operation in the war. The British government arranged for the emperor, his sons and ministers to be flown to Egypt. In consultation with the British military authorities there, the emperor issued from Khartoum a proclamation to the Ethiopian people, and to their brothers in the Italian colonies, announcing his intended return to effect their liberation with British aid. This proclamation, distributed by the R.A.F. in Aug. 1940, was joyously received in Ethiopia. Patriots immediately made their way across the frontier to convey to the emperor enthusiastic welcome and support.

On Aug. 12, 1940, the Anglo-Ethiopian noncombatant mission 101, headed by Brigadier D. A. Sandford, secretly entered Ethiopia to make contact with the patriot forces there. Brigadier Orde Charles Wingate was appointed to serve under the emperor, as commander in chief of an army of liberation, appropriately designated "Gideon Force," consisting of 1,000 Ethiopians, 1,000 Sudanese troops and 100 British officers. This small force, slenderly armed, and without air cover, crossed the frontier on Jan. 19, 1941, and vanquished, with the aid of the local patriot guerrillas, 40,000 heavily-equipped Italians entrenched in the mountains of the Gojjam. Debra Markos was entered on April 5 by the emperor and his force. In the north, Eritrea had fallen to Lt. Gen. Sir William Platt and his army from the Sudan, while from the southeast a third attack was directed by Gen. Sir Alan Cunningham against Italian Somaliland. Gen. Cunningham's army liberated Addis Ababa on April 6. On May 5, after exactly five years of Italian occupation, the emperor re-entered his capital amid overwhelming enthusiasm.

After the victory, as a result of the *de jure* recognition of the Italian conquest by Great Britain, Ethiopia was officially administered as occupied axis territory until the Anglo-Ethiopian agreement of Jan. 31, 1942. This agreement left the one railway—Jibuti-Addis Ababa—and about one-third of Ethiopia, the sparsely populated Ogaden and so-called "reserved area" still under British military administration, though without surrender of Ethiopian sovereignty. The agreement of Dec. 19, 1944, slightly reduced the area under British administration, restored the

Haile Selassie receiving the homage of his subjects on his return to Addis Ababa, May 5, 1941, following a five-year exile



important railway town, Dire Dawa, to Ethiopian government and made possible the return of the railway to the Franco-Ethiopian company.

Reconstruction.—The legal code was reformed to accord with modern humanitarian principles, in consultation with British jurists; old customs, such as adjudication by the passer-by, were abolished; no one could officiate in any court who had not prescribed qualifications of education and experience. Full-time salaried, uniformed, trained military and police forces, under the ministries of war and public security, replaced former citizen levies and local guards. The imperial guard and imperial Ethiopian army were trained by a British military mission.

In 1945 a new Ethiopian dollar currency (Eth. \$10 = £1\$ sterling) replaced the old Maria Theresa silver dollar, and the East African shilling used since the liberation. Land survey and registration were proceeding; a new land act abolished all former dues and charges in cash, produce and labour, and substituted a single tax, payable on all land, used or unused, and scaled for fertile, semifertile and poor land. This opened a new era of prosperity for the hard-working peasant. Tax on church lands was paid to the ecclesiastical fund for church and school purposes.

Transport was a major problem owing to the extent of the country and its precipitous ascents. The establishment in 1946 of National Ethiopian Airlines, foreign air lines calling at Addis Ababa, development of motor transport and garages able to repair and condition cars and better upkeep of roads were of great help. Lack of access to the sea remained a serious handicap.

The remnants of feudalism were liquidated with the abolition of the legal status of slavery in 1942. The authority and responsibility of parliament were increased; the franchise was extended, vote by ballot was introduced in 1945, and local government was reorganized.

International Affairs.—Ethiopia joined the United Nations on its inception and its subsidiary organizations as they were formed, being represented at all conferences of these bodies. Though still suffering the effects of invasion, Ethiopia paid its dues to United Nations Relief and Rehabilitation Administration, made additional gifts in cash and produce to other war sufferers, and gave hospitality to Greek refugees. At the Paris peace conference (July-Oct. 1946) the Ethiopian delegation claimed the restoration to the Ethiopian empire of the Italian colonies, Eritrea and Italian Somaliland, and presented a memorandum embodying the Ethiopian government plan for the administration of Eritrea. An Eritrea-Ethiopia Unity association, and a similar one for Italian Somaliland, were formed by refugees from those territories in Ethiopia. These organizations held demonstrations and sent telegrams to the council of foreign ministers. The Ethiopian church in 1946 obtained by negotiation with the parent church in Alexandria self-government and the right to elect its own patriarch (His Beatitude Etcheguie Gabze Gozguis) and (E. S. Pt.) to establish an ecclesiastic college.

Post-Liberation Reform.—The date of the emperor's return (May 5, 1941) marked the beginning of a period of reforms and modernization. In the early years following the proclamation of Ras Tafari, later Emperor Haile Selassie I, as heir to the throne and ruler of the empire, he could pursue his modernization plans only slowly, careful not to offend the venerable customs in the framework of which ancient Ethiopia had developed. However, the restoration of 1941 allowed the emperor to proceed with a bold modernization program that otherwise would have

been considered imprudent and impossible to realize. The constitution which, in 1931, he had granted voluntarily to the nation served as point of departure for his radical reforms which completely changed the almost mediaeval structure of the country within the span of a few years to a highly modernized state based on democratic principles. This development was possible under an imperial government thanks to the creation of the necessary institutions, an administration comparable to those of advanced countries and, particularly, the personal action of an enlightened sovereign. The emperor understood the singular importance of public instruction and public health and realized that Ethiopia's true independence and sovereignty could only be assured on these indestructible foundations. Public instruction, therefore, had a foremost place in the emperor's program and after 1941, its administration was under the personal leadership of the monarch. At the same time, public hygiene was stressed, and the emperor's reform plans envisaged, even in the face of adverse material conditions created by the war, the maintenance of already existing hospitals, the creation of new ones and the development of a modern system of health services acces-(H. SE.) sible to all.

	•	tistical Data, 1 1938	1938	1945	
İtem	Value (000's omitte	Amount or ed) Number (0		Amour d) Numb	
Exchange rate United States	•	1 Lira = 5.26 cents U.S	S.	2.424 Ethio \$1.00	
Great Britain	•	92.7 to 94.8 =£1		10 Ethiopie £1*	
Finance Government revenues (estimate) Government expenditur (estimate) Transportation	es \$83,701			۵.	
Railroads		487 mi.			
Highways Communication	•	4,34 0 mi.			
Telegraph lines		1,229 mi.			
Exports† Total	•		\$12,929‡ (£3,216)	•••	
Coffee	•		\$4,963 (£1,232)	13,396	tons
Cereals and pulse	•		\$1,915 (£475)	49,842	,,
Wheat flour	•		\$1,878 (£466)	15,292	"
Imports† Total	•		\$15,545		
Cotton piece goods	•		(£3,857) \$7,885 (£1,956)	896,112	pieces
Cotton yarns and threa	ds		\$1,812 (£450)	•••	
Salt	•		\$1,042 (£259)	38,095	tons
*1946 exchange. †Sept. 1944 to Sept. 19 ‡Plus supplies to British fo		istics in total f		ast Africa.	

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Eucharistic Congress, 33rd and 34th

See ROMAN CATHOLIC CHURCH.

European Advisory Commission

One of the principal decisions of the Moscow conference of Oct. 1943 was to set up a European Advisory commission to work on the principal political problems arising from the termination of the war in Europe. This commission met first on Dec. 15, 1943, in London. Until its termination in the summer of 1945, the commission met more than 100 times, formally and informally. It dealt primarily with problems arising from the surrender of the axis countries in Europe. Most of its work related to Germany and Austria, although it was also active in negotiating the surrender terms subsequently applied to Bulgaria and Rumania. In Nov. 1944 the three original members, the United States, Great Britain and the U.S.S.R., invited France to join the commission.

The commission was composed of four representatives, one appointed by each government. They were, for the United States, Ambassador John G. Winant; for the U.S.S.R., Ambassador Foydor Gousev; for Great Britain, Sir William Strang; for France, Ambassador Rene Massigli. The representatives had the assistance of political, military and other advisers, and of a joint secretariat.

The commission, designed to be a recommending body, was in practice a negotiating organ. Its discussions were conducted and decisions reached on the basis of detailed instructions from the four governments. Actual discussions were limited to specific arrangements for dealing with the defeated axis states, although numerous draft directives were submitted by the British and United States delegations covering a broad range of problems never dealt with formally. Circulation of draft directives facilitated exchange of views and prepared the way for the actual negotiation of these matters later undertaken by the Control council for Germany and the Allied Control commission for Austria.

The chief task of the commission was the negotiation of surrender terms to be imposed upon Germany in accordance with the Casablanca formula of unconditional surrender. The agreed instrument was recommended by the commission in July 1944, and accepted by the three member governments. After the surrender of May 8, 1945, the commission rewrote the instrument as a declaration to provide for joint Allied action in imposing basic military requirements in Germany. This was signed and issued at Berlin by the four commanders-in-chief on June 5, 1945. Later, certain additional requirements, broadening the imposed terms to political and economic matters, were agreed upon by the commission and accepted by the four governments.

Another major task was the negotiation of agreements defining the three zones of occupation in Germany and the areas of occupation in Berlin (Sept. 12 and Nov. 14, 1944). At Yalta it was decided to assign the French a zone and the commission proceeded to define such an area.

The commission also worked out basic plans for the machinery of joint control of Germany. The agreement of Nov. 14, 1944, became the basis for planning the control machinery and putting it into operation in the summer of 1945. An additional agreement of May 1, 1945, provided for French participation. Plans for Allied control machinery and zones of occupation in Austria were embodied in agreements signed in July 1945.

The commission was supplanted as a planning and coordinating agency by the Allied Control council for Germany and the Allied Control commission for Austria (qq.v.) in the summer of 1945. The four governments, in accord with the Potsdam declaration (Aug. 1945) recommending

its dissolution, agreed to consider the Commission as terminated in Aug. 1945. (See also Allied Control Commission for Germany; Allied Military Government; International Conferences, Allied [World War II].)

(H. F. Ms.)

European Central Inland Transport Organization

See International Organizations.

European War

See World War II.

Evacuation of Children

See CHILDREN IN WORLD WAR II.

Evangelicals, National Association of

At a constitutional convention held in Chicago, Ill., in May 1943, and attended by approximately 500 executives and leaders of 63 Protestant denominations, the National Association of Evangelicals was formed to provide a means of co-operation in fields of common interest. Its membership, as of late 1946, consisted of 25 denominations, approximately 300 single churches of other denominations and a considerable number of educational institutions and mission boards.

Its operations were carried on largely through 11 affiliated corporations and commissions including Evangelical Foreign Missions association, National Religious Broadcasters, National Sunday School association, Chaplaincy Counsellors for Industry, Evangelical Youth, Commission for Evangelism, Commission for War Relief, Commission for Christian Educational Institutions, Commission for Church Schools, Commission for Home Missions and Commission for Chaplaincies.

Its doctrinal position was strongly conservative. The official organ, United Evangelical Action, was published semi-monthly at 903 St. Paul Building, 111 E. Fourth Street, Cincinnati, O. Regional and departmental offices were maintained in New York city; Newark, N.J.; Washington, D.C.; Buffalo, N.Y.; Detroit, Mich.; Cincinnati, O.; Chicago, Ill.; Minneapolis, Minn.; Los Angeles, Calif.; Portland, Ore.; and Boston, Mass. The national office was located at 120 Tremont St., Boston, Mass.

Officers in 1946 were Dr. R. L. Decker, of Kansas City, Mo., president; Dr. Stephen W. Paine, of Houghton, N.Y., first vice-president; Dr. William H. Rutgers of Grand Rapids, Mich., second vice-president; Seth A. Rohrer, of Elkhart, Ind., secretary; H. J. Taylor of Chicago, Ill., treasurer. Dr. J. Elwin Wright continued as executive secretary. Its work between general meetings was administered by an Executive committee of 11 members and a Board of Administration of 48 members. (J. E. WT.)

Evatt, Herbert Vere

Evatt, (1894—), Australian statesman, was born April 30, 1894, in East Maitland, New South Wales, the son of a storekeeper. He studied at St. Andrew's college and won his degree as doctor of philosophy from Sydney university in 1924. He practised law in New South Wales, and at the age of 36 was named justice of the federal high court of Australia—the youngest man ever appointed to that high post. After ten years of service on the high court he left in 1940 to enter politics. Running on the Labour party ticket he was elected to the Australian parliament (1940) and after John Curtin became premier in Oct. 1941 he appointed Evatt attorney general and minister of external affairs. Evatt broke away from what was

loosely termed as a "British-influenced" policy and evolved a vigourous and independent Australian policy, although he bent it to fit within the framework of the empire.

After the start of World War II Evatt insisted on Australia's right to sit in the Pacific War council as a coequal with Britain and the United States. With regard to Allied policy on Japan, Evatt criticized the British government on Aug. 24, 1945, charging that London had attempted to deny Australia a footing of equality in the Japanese peace discussions. He said his government had countered this action by direct dealings with Gen. MacArthur and obtained authority for Australia to have Gen. Thomas Blamey be its representative at the Japanese surrender ceremonies.

He was his country's delegate to the United Nations conference in San Francisco and soon established himself as the champion of the small "voiceless powers" tilting against the veto. On May 3, 1945, he told the U.N. that a great error had been made in employment of the veto and suggested several amendments to restrict it. While not permitted to sit in the Allied council of foreign ministers in London (Sept.-Oct. 1945), he did wage a sustained battle from the side lines for the rights of small nations to have a voice in drafting the peace treaties. He also attended in 1946 the major conferences of the U.N. in New York and the 21-nation peace conference in Paris, at which he continued his campaign against the veto.

Events of the Years, 1937-46

See Chronology of Events, 1937-46.

Excavations

See Archaeology.

Exchange Control and Exchange Rates

At no time during the whole interwar period (1918-39) did a really balanced world economy exist; this fact was obviously reflected in the international currency situation. The pre-1914 gold standard was destroyed, and the position of the pound sterling, around which the international gold standard had been centred, was weakened as a result of World War I. Immediately after the end of that war, attempts were made to stabilize currencies and to re-establish the gold standard. Such was the objective of the recommendations of the Brussels conference in 1920 and of the conference in Genoa in 1921. Also, the financial committee of the League of Nations supported this policy and was helpful in promoting currency stabilization, especially in central and eastern Europe. When the World Economic conference met in Genoa in 1927, it declared that the main task in the field of monetary reconstruction had been achieved, because most countries had stabilized their currencies in terms of gold.

Shortly afterward the events showed that this monetary stability was not based on a balanced state of the world economic situation. The decline of prices of agricultural products and raw materials in the years 1928 and 1929 rendered the position of the balance of payments of a number of primary producing countries difficult, especially if they had substantial foreign debts, the burden of which increased automatically with declining prices of their staple exports. Thus the Latin-American countries, Australia and New Zealand were hit first, and shortly afterward the Danubian countries.

Already in 1929 the currencies of the following countries were depreciated: Uruguay in April, China in September,

Japan in October, Argentina and Paraguay in November and Brazil in December. In 1930 came the depreciation of the currencies of Bolivia and Australia (in Australia the official suspension of the gold standard was already declared in Dec. 1929) in March, and of Venezuela and New Zealand in April.

But only the Wall street crash in 1929, followed by a deep economic crisis in the U.S., and the resulting cessation of practically all foreign lending of the U.S. brought to the fore the realization of the fact that the whole world economy was shaken. The gravity of the monetary crisis shifted to Great Britain and to central Europe. The international monetary system, which many people thought to have been re-established, began to disintegrate, and soon several monetary systems or blocs began to emerge.

Sterling Area.—Under the extremely heavy pressure on its balance of payments, Great Britain decided to suspend the gold standard on Sept. 21, 1931. The pound began to depreciate rapidly; currencies of a number of countries which regarded the British market as the most important for them followed the movements of the British pound. Denmark suspended the gold standard on Sept. 29, 1931; Norway and Sweden on Sept. 28, 1931; Egypt, Palestine, India and Ireland in Sept. 1931; Finland on Oct. 12, 1931; Canada on Oct. 19, 1931; Portugal in Oct. 1931; Japan in Dec. 1931; and finally the Union of South Africa in Dec. 1932.

Subsequently the pound of sterling was not again stabilized in terms of gold, although its relation to the dollar remained fairly stable from 1934 on. Yet certain other nations which had abandoned the gold standard after Great Britain (Australia and New Zealand had preceded), then fixed the external values of their currencies in terms of sterling. These were countries which kept important parts of their central bank reserves in the form of sterling rather than in gold or foreign exchange of other kinds. This group of nations, including Britain, became known as the sterling area. It had both British and non-British members. With the exception of Canada and Newfoundland the entire British commonwealth was included. Certain non-British nations, Portugal, Egypt and Iraq, became members immediately. Siam joined in 1932, Sweden, Norway, Denmark, Finland and Estonia in 1933, and Iran and Latvia in 1936. The basic economic reason underlying both the choice of sterling as a suitable asset to hold a part of their official reserve, and the decision to follow Britain in a policy of depreciation after 1931 was the fact that all sterling area nations were already doing a very high proportion of their trade with each other and particularly with Great Britain. Several countries, such as Argentina and Japan, kept their currencies stable in terms of sterling for many years without, however, keeping appreciable reserves in sterling; these countries were generally not regarded as members of the sterling area.

The sterling area was the result of decisions by the individual nations, not of any special agreements. The nations concerned did not attempt to keep their monetary policies completely in accord with one another, and there were several changes in exchange rates, for example by New Zealand and Denmark. These steps were taken by the respective nations without any reference to Great Britain. There was no pooling of dollars and no exchange control in Great Britain.

Nevertheless, the sterling area became an important factor in the international monetary policy, and its existence undoubtedly strengthened the position of the sterling.

Furthermore, "the sterling bloc" appeared to have a general stabilizing influence. Most of the members of the sterling area were able to maintain a free exchange market without exchange control nearly until the outbreak of World War II. Exchange control was introduced by Denmark, Latvia and Estonia.

The average value of the pound of sterling as percentage of its gold parity in 1929 was as follows: in 1932, 72; 1933, 68.1; 1934, 61.8; 1935, 59.8; 1936, 60.5; 1937, 60; 1938, 59.3.

It is interesting to compare this development with the exchange rate fluctuations of other currencies of the sterling area. Table I shows a large degree of exchange stability in the sterling area. This was achieved without foreign exchange control, which among the sterling area countries was only an exception.

The gold value of no currency in the sterling group depreciated less than that of the pound; the majority of the sterling countries pegged their currencies to the pound at a discount from the old parity.

Table I.—Value of Currencies of the Sterling Area as Percentage of Their Gold Parity in 1929*

	1932	1933	1934	1935	1936	1937	1938
Union of South Africa	97.9	67.6	61.1	59.1	59.8	59.4	58.8
Australia	57.5	54.2	49.1	47.4	48.2	47.8	47.3
New Zealand	65.8	54.7	49.3	47.7	48.5	48.2	47.6
Iraq		68.1	61.8	59.8	60.5	60.	59.3
Egypt	72	68.1	61.8	59.8	60.5	60.	59.3
Thailand	81.7	68.7	62.3	60.3	60.9	60.4	59.8
Denmark	70.3	55.8	50.1	48.5	49.	48.6	48.1
Finland	61.7	58.1	52.8	51.	51.5	51.2	50.6
Norway	67.2	62.7	56.3	59.5	55.2	54.7	54.1
Sweden	68.9	64.5	57.8	56.	56.6	56.2	55.5

*From League of Nations, International Currency Experience, 1944, p. 51.

Great Britain had chosen devaluation of the pound as the step toward restoring the maladjustment in its currency position and toward renewing the equilibrium of its balance of payments. At the beginning of this policy there were many who refused a stable exchange rate, believing that a flexible rate would be of better use in keeping a greater degree of stability of the British economy. But after a short time the advocates of foreign exchange stability won the upper hand.

Although the pound was not defined in terms of gold, the links to gold remained through the ratio to the dollar and, moreover, because a free gold market was maintained in London.

A free foreign exchange market continued to exist in London. The control of foreign capital issues imposed in 1931-32 was relaxed in the following years. Even non-British members of the sterling area needing to replenish their sterling reserves were able to obtain loans in London.

Adjusting the exchange rate to the falling level of prices—the increased value of gold—Great Britain and the members of the sterling area avoided to a substantial degree the acute deflationary crisis which befell the other countries. The share of the sterling area in world trade increased relatively in the '30s; the level of production in the entire bloc was better maintained, and the total recovery was quicker.

The gold reserve of the Bank of England went up from \$928,000,000 in 1933 to \$1,587,000,000 in 1938, to which \$448,000,000 held by the Exchange Equalization account should be added. The central gold reserve of other members of the sterling bloc increased from \$494,000,000 in 1932 to \$690,000,000 in 1938.

Countries with Exchange Control.—The heavy pressure on the balance of payments of Germany and the central and eastern European nations was instrumental in introducing foreign exchange control in this part of Europe. The profound disequilibrium in the balance of payments

of these countries was caused particularly by two factors: one was the sudden withdrawal of short-term foreign credits and the other the rapid contraction of international trade coupled with the decline of prices of primary products. With the exception of Czechoslovakia all nations in this area—Germany and Austria in the first line—had borrowed heavily from abroad on short terms but were not able to repay these credits when they were due or recalled. Some countries could not continue to service their long-term foreign loans. Moratoria on foreign long-term debts were declared in 1931–32 in Germany, Austria, Hungary, Bulgaria, Yugoslavia, Greece and Rumania; standstill agreements for short-term foreign debts were arranged for the German, Austrian and Hungarian banks.

Under the circumstances which prevailed at that time, there was hardly any chance of re-establishing the equilibrium of the balance of payments by devaluation of currencies of these countries. To Germans, as well as Austrians and Hungarians, who had gone through a galloping inflation only a few years before, devaluation was identical with inflation. The governments felt that they had to maintain stable currencies and stable exchange rates. And because it was not possible to maintain stable exchange rates in a free exchange market, foreign exchange control was introduced. Germany was first in deciding on this step in July 1931, followed closely by Austria, Hungary, Greece, Czechoslovakia, Yugoslavia and the Baltic states. Rumania introduced foreign exchange control in 1932, Italy in 1934 and Poland only in 1936. Turkey had foreign exchange control already after 1930 and Spain after 1981. Thus only a few years after the postwar foreign exchange controls were abandoned, a new system of exchange control was introduced throughout central and eastern Europe.

As was pointed out, the chief objective of exchange control was to attempt the maintenance of the exchange rate stability in spite of a very unfavourable development of the balance of payments. To achieve this goal, a quantitative exchange control was introduced, the governments trying to regulate directly the demand and supply of foreign exchange. While the exchange control in the immediate postwar period was directed mainly against speculation and exchange fluctuations caused by it, this time the objective was wider and more difficult to attain. It was considered a political necessity to hold the official rate of exchange. Since the rate of exchange could not be adjusted to help in reaching a new equilibrium in the balance of payments, the other alternative was to change the balance of payments by direct measures. Each country tried, therefore, to reduce demand and to increase supply of foreign exchange. The foreign exchange market was centrally controlled, and a system of permits and licences was introduced.

A licence was required for every remittance abroad. The foreign exchange authorities had the difficult task of allocating the available foreign exchange, and very often they had to proceed arbitrarily with no firm objective rules available. In these attempts to reduce the demand for foreign exchange, permits for so-called unnecessary payments were first refused, such as all capital export, granting of credits and travel expenditures; then transfer of foreign debts and even of interests and dividends was suspended. Finally the authorities considered it necessary to cut down the allocation of foreign exchange for the payment of imports. Germany, Austria, Hungary and several other countries allowed the goods to enter, but they allocated foreign exchange according to certain rules of priority, excluding payment for luxuries and granting for-

eign exchange for import of raw materials. Foreign suppliers of goods often were paid in blocked domestic currencies which were not freely transferable. Czechoslovakia, on the other hand, maintained a different principle; no imports were allowed for which payment abroad was not assured. Thus the creation of blocked accounts was largely avoided.

In order to increase the supply of foreign exchange, all exporters were obliged to surrender their proceeds in foreign exchange to the proper authorities at the official parity. The same applied to other income from abroad. As the foreign exchange situation deteriorated more and more, some countries—among them Germany and Czechoslovakia—required that all foreign holdings, in whatever form, belonging to their residents be registered. It is obvious that the surrender of foreign exchange was demanded, but in addition some foreign securities also had to be liquidated.

Foreign exchange control became a very elaborate apparatus, strongly interfering with the whole economic life. It is not surprising that this instrument, which had been introduced for reasons of currency stability, was used to foster foreign trade objectives, mostly increasing the strong protectionist policy of that time. The next step from exchange control led to foreign trade restrictions and from there to a broadly planned economy.

Yet in spite of the great emphasis laid on the maintenance of the original exchange rate and of all the intricacies of exchange control, most of the countries concerned were obliged to devaluate their currencies. Only Germany, Bulgaria and Poland maintained officially their pre-1931 rate until the outbreak of World War II. Thus Austria devaluated in 1934, Czechoslovakia in 1934 and again in 1936, Greece in 1932, Hungary in 1935 and 1936, Rumania in 1935, Yugoslavia in 1932 and Italy in 1936.

The official value of these currencies as percentage of their gold parity in 1929 was as follows:

	1933	1935	1938
Germany	99.6	100.3	100.1
Greece	43.3	42.9	40.8
Hungary	99.1	99.2	99.4
Italy	99	93	59
Rumania	98.6	89.8	72.3
Czechoslovakia	100.4	83.4	69.1
Yugoslavia	77-7	77	77.5

But we must judge not only by the official quotations of these currencies, which gave an impression of a rather large degree of stability; very soon a system of multiple exchange rates developed. Rumania, Bulgaria, Hungary and Yugoslavia, for example, paid a special premium—a higher rate—for all strong currencies obtained from export while they also sold at a higher rate foreign exchange for imports or other purposes. These premiums changed often according to countries or commodities, so that a simple system was replaced by a system of unstable multiple rates—a sign of a disintegrating currency system or of a comprehensive planning through the manipulation of exchange rates. Such premium was not introduced into Czechoslovakia and Austria.

Another source of multiple rates and even of a black market in foreign exchange was foreign blocked accounts. It is obvious that the foreign owners of these accounts tried to convert them in foreign exchange even at a high discount. In many cases some special use of these accounts was allowed, such as tourist traffic, emigrants' remittance, a new capital investment or a so-called additional export.

A regular quotation of such currencies was introduced, especially for various kinds of blocked marks.

According to quotations in Basel the value of blocked marks as percentage of their gold parity was as follows:

				Effecten-
Average	Register-	Reise-	Kredit-Sperr	Sperr
Rates	mark	mark	mark	mark
1935	56.3	65.6	37.3	28.2
1936	53	61.1	28.3	23.1
1938	46.5	58.4	13.4	11.8
1940	25.6	53.8	•	
1942	32.2	54.7	Handels	Sperr mark
			3	11.2
			1	10.6

The value of the blocked Lira as percentage of the 1936 parity was:

	Turistica	Reinvestimento	Mixto
in 1939	89	55	
1941	78	44	71
1942	74	30	64

The principal objective of the exchange control, avoidance of devaluation, was not and could not be attained. The exchange markets in a great part of Europe became very complex, regimented by authorities who vainly tried to stop the many kinds of circumvention of their measures. In addition to all other difficulties, exchange control was used as a convenient vehicle for foreign trade purposes, particularly for the German totalitarian trade policy. Although Germany was not the first country to substitute direct payment between trade partners by bilateral clearing payment arrangement, it worked out a system which was well-suited to its general aims.

The idea of bilateral clearing arrangements originated in Austria; there it was thought that it would be possible to overcome foreign exchange difficulties restricting trade by introducing payments in local currency into cumulative accounts owned usually by the central bank of the other country. And it was expected that trade would mutually expand, payments would be made over these accounts, and no great permanent balances would accrue. Some countries introduced such accounts even unilaterally as an action against a country which did not pay for its imports. Germany was not too eager, at first, to organize these clearing arrangements, because it had an export surplus with most of the countries concerned and was afraid that clearings would equalize the balance of trade. It became clear, however, that under the new circumstances the Danubian countries would not be able to pay import surplus from Germany in free foreign exchange. And when the German trade policy was reoriented in the autumn of 1933 as part of the general nazi policy, the system of clearings served as a good instrument for the German economic penetration into the Danube basin.

The technical mechanism of the clearing arrangements was simple. A fixed ratio between the currencies of the two countries was usually agreed upon. All payments between the two countries were effectuated in local currencies on the basis of the fixed ratio into the cumulative account belonging to the central bank or another authority of the receiving country. This system could operate smoothly so long as the payments on both sides were equal and so long as no permanent huge balances arose. If such balances did arise, trade could be slowed down. Experience with these bilateral clearing agreements showed that they led to equalizing of the balance of trade between a pair of countries.

It became Germany's policy to shift its imports of food and raw materials as much as possible to central and east-

ern Europe. The situation was very appropriate for such a step, since the Danubian countries, suffering under the impact of a heavy agricultural crisis, were looking for an outlet for their surpluses. Germany started a big buying drive, offering prices which in local currencies were often higher than prices obtainable on the world markets. It did not need to pay in foreign exchange because it arranged clearing agreements. It should be mentioned that in all these agreements the mark was put at its official value and was therefore mostly overvalued in relation to other currencies. This too made it easier to offer high prices. Germany's large purchases soon resulted in its developing import surpluses and consequently large debit balances on the clearing accounts with these countries. At the end of 1934 German debts in all clearing accounts already totalled mk. 450,000,000, the greater part owed to the countries of central and southeastern Europe. In March 1935 this debt reached mk. 567,000,000. The creditor countries soon accumulated larger sums on their clearing accounts with the German Reichsbank than they needed to pay for the current import of German industrial goods.

The only possibility of using these export proceeds was to increase imports from Germany, because the accounts were to be settled exclusively within the framework of bilateralism. In order to do that, the creditor nations had to switch imports from other countries to Germany and were compelled to buy goods of mediocre quality at high prices. Germany's import from the agricultural countries of southeastern Europe-Hungary, Yugoslavia, Rumania, Bulgaria and Greece-went from 3.8% of its total import in 1929 up to 10.5% in 1937, and it sent to them in 1937 9.4% of its total export as compared with only 4.3% in 1929. In 1937 Bulgaria exported to Germany 43.1% of its total export, Greece 31%, Hungary 24.1%, Yugoslavia 21.7% and Rumania 19.2%. Generally it was a substantial increase over the 1929 figures. The same applies of course to the imports of these countries from Germany.

With the help of bilateral payment agreements Germany built its economic hinterland in the Danube basin; the trade arrangements with it resulted in detaching this whole area step by step from the world economy.

The nations in central and eastern Europe did not have clearing agreements with Germany alone; their trade relations with each other were also organized on the clearing agreement basis. Czechoslovakia was the only country in this part of Europe whose export to free exchange countries reached 58% in 1937 as compared with 38.2% in 1929. The foreign trade of all other countries in this area was in its greater part carried out within the framework of clearing agreements.

Exchange control, introduced first to help in maintaining stable exchange rates, thus became an important instrument of totalitarian trade policy; it led to bilateralism in foreign trade, to the settlement of balances of trade between pairs of countries. The system of bilateral arrangements spread even to other parts of Europe, threatening to disintegrate further the weakened fabric of international trade. For Germany, exchange control became an integral and very important part of the nazi economic policy.

The unfavourable balance of payments also induced most Latin-American countries to establish exchange control. Already in 1931 exchange control had been introduced in Argentina, Bolivia, Brazil, Chile, Colombia, Nicaragua and Uruguay, in 1932 in Costa Rica and Paraguay, and in 1936 in Venezuela. In some countries multiple exchange rates were established according to different types of transactions. Mexico was the only major Latin-Ameri-

can country which did not have any exchange control at all; Cuba had it only during a short period. But Argentina, Brazil, Chile, Peru, Colombia and Uruguay maintained exchange control throughout the '30s, though not all of them were able to uphold stable exchange rates. Currencies of some countries had fixed relations to the pound or to the dollar. A fixed relation to the pound was established in Argentina and Bolivia, while Brazil, Chile, Colombia, Costa Rica, Ecuador, Mexico and Venezuela maintained a fixed relation to the U.S. dollar.

United States and the Gold Bloc.—When the world economic crisis came in 1930, the monetary position of countries with large gold and foreign exchange reserves remained strong. In March 1930 the U.S. was holding 57% of the world total monetary gold reserve, France held 11%, Belgium, Netherlands, Sweden and Switzerland 10%, and the United Kingdom 10%, or all these six countries together had 88% of the world total.

At the end of 1931 the foreign exchange and gold reserves of central banks were as follows:

Belgium \$354,000,000 (gold)

France \$3,541,000,000 (out of which \$2,699,000,000 were gold)

Netherlands \$392,000,000 (out of which \$357,000,000 were gold)

Switzerland \$473,000,000 (out of which \$453,000,000 were gold)

The United States \$4,225,000,000

All these nations were creditor nations. They were able to withstand even an unfavourable development of their balance of payments without having to take special measures immediately to defend their exchange rates. Nevertheless, they could not escape the task of adjusting the internal price level to the fall of prices on international markets. If they wished to maintain a free exchange system and the original parity of their currency, they were obliged to pursue a policy of deflation.

The U.S., however, having to cope with the greatest economic crisis in its history, with unemployment reaching menacing proportions and prices steadily declining, embarked upon a policy of domestic price-raising and public spending in an attempt to reduce unemployment. It was felt that the devaluation of the dollar might stimulate a

spending in an attempt to reduce unemployment. It was felt that the devaluation of the dollar might stimulate a price increase. Thus in April 1933, shortly before the World Economic conference met in London in June 1933, the dollar was depréciated. During the work of the conference, the U.S. did not consider it feasible to commit itself to stability of the dollar, and the president emphasized that for the U.S. the price development at home was of greater importance than consideration of international monetary conditions. But on Jan. 31, 1934, the U.S. dollar was newly pegged to gold. The new legal parity was defined in gold \$1–0.88867 gr. of fine gold against the old parity \$1–1.50463 gr. of fine gold.

A number of Caribbean nations adopted the policy of the U.S. Cuba, Guatemala, Haiti, Honduras and Panamá all depreciated their currencies in April 1933; Cuba and Haiti introduced new legal parities in 1934.

In the troubled days of the spring of 1933 even the U.S. thought it necessary to organize an exchange control. Already in Nov. 1934, however, it was completely eliminated. The U.S. kept a free exchange market; on the New York exchange foreign exchanges were freely quoted, and forward exchange transactions and arbitrage functioned freely. While the U.S. banks could not hold and freely export

gold, foreign holders of dollars encountered no obstacles in buying and exporting gold.

High hopes were entertained everywhere that the London Economic conference would prepare the ground for a solution of the most pressing economic and financial problems and that an international effort toward the consolidation of the world currency situation would be made. When the conference failed in achieving any of its major objectives, no substantial change in the monetary field could be expected.

France officially took the lead of the gold bloc, whose other members at that time were Belgium, the Netherlands, Switzerland and Poland. All these countries maintained a free exchange market and stuck to their 1929 parities. Of course, the devaluation of the U.S. dollar greatly increased the pressure on the currencies of the gold bloc, and similarly affected the British pound. Placed between the exchange control countries of central Europe, with whom they had a large trade, and the sterling area, the gold countries were faced with the difficult task of adjusting their price levels to international prices.

A sizable deflation was required. Yet in advanced industrial countries it was extremely difficult to carry out deflation because of the great price and wage rigidity. Belgium, as the first of the gold bloc countries, devalued its currency; the parity of the belga on March 30, 1935, was expressed in terms of gold as 0.1506 gr. fine gold as against 0.20921 gr. fine gold of the previous parity. No exchange control was introduced. Switzerland and the Netherlands were rather successful in their deflationary policy, the national economy of smaller countries being more flexible than that of large states. In France the economic and monetary situation grew steadily more difficult. Unemployment was increasing, and the government policy did not pursue any clear course. There was not very much confidence in the stability of the French franc, and this fact stimulated a substantial flight of capital from France. The gold reserve of the Bank of France declined from \$3,218,-000,000 (old gold dollars) at the end of 1934 to \$1,769,000,-000 at the end of 1936. The French government was faced with a very uneasy situation, as it had not succeeded in carrying out deflation, and it could not stop the flight of capital without introducing foreign exchange control. But France wanted to maintain a free exchange market, an indispensable feature of the gold standard.

Tripartite Agreement.—After months of an uncertain policy, France finally decided to devaluate the franc. The formal decision was preceded by negotiations with the U.S. and Great Britain and between these two countries. There was danger that a devaluation of the French franc might initiate a decline in the rate of the pound and perhaps a new wave of competitive devaluation. When, therefore, the French franc was devaluated officially in Sept. 1935, this act was accompanied by the so-called Tripartite agreement between the U.S., Great Britain and France. The agreement was intended to provide a formal basis for the flexible-gold-settlement system. According to it, exchange adjustment in the future should be made by mutual consultation and agreement. The immediate objective of the Tripartite agreement was to prevent a new devaluation cycle. It recognized the principle that exchange variations are not solely a matter for sovereign national action. It provided a gold settlement mechanism whereby the exchange funds of countries with fixed or flexible gold prices could have access to each other's markets and could cooperate in the management of gold shipments in both di-

rections. The prices governing official transactions in the countries with flexible gold prices were held stable for 24 hours in order to enable the authorities of countries with fixed gold prices to complete the conversion operation without risk. Because the French monetary situation remained unstable even after the devaluation, the Tripartite agreement had in addition to the gold settlement mechanism as its main objective the regulation of the dollar-sterling rate in the common interest of the two leading currencies and the currency areas attached to them.

The new gold parity of the French franc, fixed on Oct. 1, 1936, was 1 franc—0.0387 gr. fine gold against the previous parity of 1 franc—0.0441. The currencies of the two other members of the gold bloc, the Netherlands and Switzerland, were also devaluated in Sept. 1936. No new gold parity was fixed for the Dutch gulden. In Switzerland a flexible gold price of 0.215—0.190 gr. fine gold was introduced compared with the previous parity 0.29032 gr. fine gold. Poland, which had established exchange control in April 1936, did not follow the devaluation of the gold bloc countries.

After the French, Swiss and Dutch currencies were devaluated and the Tripartite agreement had been concluded, the devaluation process was generally considered as completed, and an era of consolidation of international monetary relations was anticipated. Hope was expressed that international co-operation in this important field would be organized, particularly as the general economic outlook in 1936–37 seemed to be improving.

Exchange rates in the year 1937 were relatively stable; the position of the agricultural exporting countries improved in the first half of 1937, and some attempts were even made to relax the strong bilateral trading control system in the Danube basin.

Prominent in the currency listing of this year were sudden capital movements, inspired partly by international political tension, partly by the radical change in conditions on the London and New York stock market. Especially was the autumn collapse in New York felt heavily. The U.S. gold reserves went up from \$6,649,000,000 (old gold dollars) at the end of 1936 to \$7,536,000,000 at the end of 1937; during the same time the gold reserve of the Bank of France went down from \$1,769,000,000 (old gold dollars) to \$1,516,000,000.

The deterioration in French finances up to midsummer was regarded as partly responsible for the sudden capital movements. The French franc was again devaluated on July 21, 1937, from 0.0441 gr. fine gold to 0.0387 gr. fine gold. In May 1938 the franc was virtually pegged to the pound at the rate of 179 francs to 1 pound.

With the exception of the unsettled French situation, the exchange rates in 1938 were also relatively stable, though to a lesser degree than in 1937. Political uncertainties and adverse economic developments were responsible for some violent movements on the market. On the whole, the world-wide depreciation in the foreign exchanges which began in 1931 advanced only a little in 1937. Only 7 of the 47 exchanges shown underwent a further depreciation in excess of 3% of their 1929 parities, comparing the September average with that of Dec. 1937.

Exchange restrictions continued in 1938 to be a major characteristic of world foreign exchange markets, and practically no country discontinued restrictions during this year. One careful survey showed on Nov. 30, that 39 out of 91 exchange areas had restrictions in force, and only 10 of the 39 were supplying foreign exchange to cover current

bills "promptly to fairly promptly."

Germany's bargaining position in the clearing agreements was strengthened first by the annexation of Austria in March 1938 and thereafter by the occupation of the parts of Czechoslovakia ceded to it by the Munich verdict. It absorbed already nearly 50% of the total trade of the Danube basin.

The dollar-sterling rate fluctuated within a moderate range in 1937, but the pound fell by 5% in 1938. In 1939, from January through August, a stable rate at \$4.68 to the pound was maintained.

Exchange rates were generally stable during the first eight months of 1939. The average dollar value was lower in June 1939 than in Dec. 1938 by 17% in China, 14% in Peru, 12% in Brazil, 4% in Rumania and 2% in the Netherlands.

This stability of the dollar value did not, however, conceal the fact that many currencies were under pressure of adverse balances of payments. The imminent danger of war caused a permanent flight of capital, particularly to the U.S., whose gold reserve at the end of 1938 reached \$8,609,000,000 (dollars of old parity). During the months January-August, \$2,600,000,000 of gold was sent to the U.S., coming principally from the United Kingdom, the Netherlands, Belgium, Canada and Japan.

These gold shipments and other stabilizing and pegging devices and of course the whole machinery of exchange control kept exchange rates generally firm.

Table II gives the value of currencies in U.S. cents in the years preceding the outbreak of World War II. All figures in Table II can supply valuable information con-

Table II.—Value of Currencies in U.S. Cents in the Years preceding the Outbreak of World War II

A-official rate

B—free rate	XII 1933	XII 1936	XII 1937	XII 1938	VI 19	1X 939
America						
Argentina A		32.72	33.31	31.13	31.22	
В	33.35	29.85	29.33	22.73	23.15	23.26
Bolivia A		9.63		3.29	3.30	2.76
В	25.50	3.01	4.95			
Brazil A		8.70			6.06	6.06
В	8.60	5.94	5.45	5.86	5.1 <i>7</i>	5.03
Canada	100.55	100.06	99.95	99.06	99.77	87.62
Chile A	9.60	5.1 <i>7</i>	5 . 17	5.18	5.17	5.17
В	3.80	3.46	4.00	4.00	4.00	4.00
Colombia	63.97	57.39	54.24	<i>57</i> .	57.1 <i>7</i>	51.00
Costa Rica	22.22	1 <i>7.</i> 76	17.29	1 <i>7.</i> 79	1 <i>7.</i> 79	17.79
Cuba	99.96	99.92	99.92	99.93	99.95	91.0
Ecuador	16.67	9.55	7.22	6.89	6.52	6.61
Mexico	27.74	27.75	27.75	19.93	19.75	19.02
Peru	22.13	25.24	29.46	20.56	17.69	19.
El Salvador	31.35	40.	40.	40.	40.	40.
Uruguay A	74.59	80.	79.94	61.74	61.61	
В		59.37	53.50	35.71	35.62	38.18
Venezuela	23.56	25.38	30.92	31.40	31.50	31.71
Africa						
Union of South Africa .	505.76	485.33	495.04	462.32	463.32	399.57
Egypt	524.71	503.36	512.75	479.01	480.24	409.76
Europe						
Germany	37.32	40.23	40.30	40.08	40.10	39.86
Belgium	21.73	16.90	16.98	16.84	17.01	17.03
Bulgaria	1.09	1.21	1.23	1.20	1.21	1.20
Denmark	22.85	21.91	22.30	20.84	20.90	19.32
Spain	12.79	11.62	11.83	11.05	11.02	10.49
Finland	2.27	2.16	2.21	2.06	2.06	1.90
France	6.12	4.67	3.39	2.63	2.65	2.27
Greece	0.89	6.90	0.92	0.86	0.86	0.46
Hungary	27.04	29.42	29.56	29.15	29.12	26.36
Italy	8.22	5.26	5.26	5.26	5.26	5.14
Norway	25.71	24.66	25.10	23.46	23.52	22.65
Netherlands	62.85	54.57	55.60	54.36	53.17	53.18
Poland	17.57	18.85	18.94	18.86	18.81	
Portugal	4.69	4.45	4.52	4.24	4.25	3.66
United Kingdom	511.59	490.78	499.64	467.03	468.24	399.51
Sweden	26.39	25.30	25.78	24.05	24.11	23.76
Switzerland	30.25	22.98	23.12	22.61	22.55	22.58
Czechoslovakia	4.65	3.52	3,51	3.42		
Turkey	74.06	79.60	79.95	79.50	78.98	76.68
Yugoslavia	2.16	2.30	2.31	2.28	2.27	2.27
Rumania	0.92	0.73	0.74	6.73	0.70	0.70
Asia						
China	33.45	29.53	29.47	16.11	13.43	6.70
India	38.39	37.09	37.71	34.86	34.92	29,93
Iran	6.04	6.10	6.21	5.80	5.82	4.96
Japan	30.74	28.51	29.08	27.21	27.28	23.46
Siam	46.90	49.99	45.80	42.81	42.92	36.62
Australia	407.50	390,99	398.10	372.06	373.12	318.38
New Zealand	408.72	393.87	401.06	373.72	374.60	319.75
	, o o., L	3,0.07		J, J., Z	37 4,00	317.73

27⁻

cerning the development of the exchange rates, but one qualifying note is necessary. Quotations of a number of exchanges included in this table did not result from free market forces; they were maintained artificially with a very elaborate exchange control system; this applied, for instance, to Germany and Italy.

A better picture of the extent of devaluation of currencies after the beginning of the world economic crisis may be obtained by indicating the value of currencies just before the outbreak of World War II as percentage of their gold parity in 1929. Here too, however, allowance must be made for all currencies the exchange rate of which was maintained artificially by exchange control, multiple exchange practices, and other devices.

Following was the parity in June 1939 as percentage of the gold parity in 1929:

Afri	ica		North America	
Union of South	Africa	56.2	The United States	59.1
Egypt		56.8	Canada	59
Latin A			d	
Argentina	official free	43.4	Australasia Australia	42.0
Bolivia	1166	32.2	New Zealand	45·3 45·5
Brazil	official	5.3 29.9	New Zealand	49.5
Diazii	free	25	Asia	
Chile	official	25.1	China	19
	free	14.5		,
Colombia	official	34.6	India	56.5
	free	34.3		•
Cuba		59	Netherlands Indies	78.4
Ecuador		193	Iraq	56.8
Mexico		23.4	Iran	38.5
Medico		-3-4		3-3
Peru		26.1	Japan	32.3
Uruguay	official	35.2	Philippine Islands	58.9
0 ,	free	20.5		
Venezuela		96.4	Thailand (Siam)	57.3
		Euroj	be	
Belgium		72.3	Czechoslovakia	
Ü			(Feb. 1939)	68.3
Bulgaria		98.7	Norway	51.9
Denmark		46.1	Netherlands	78.1
Spain		44.3	Poland	99
Finland		48.2	Portugal	56.7
France		39.9	Great Britain Rumania	56.8 69.5
Germany		99.4	Sweden	53.1
Greece		39 98.3	Turkey	96.8
Hungary Italy			Yugoslavia	76.3
Italy		59	1 0 80010 1 10	19.3

As this table shows, only Germany, Poland, Bulgaria, Hungary and Turkey quoted officially their exchange rates as nearly at par with 1929 rates. Of course, all these rates could be considered artificial with the exception perhaps of the Polish zloty, because Poland reduced its level of prices by a drastic deflation.

Devaluation had been one feature common to the development of currencies in the '30s. There were other developments—outstanding of which was the beginning of a division of currencies into two groups or blocs. The area of exchange control included important parts of Europe and many Latin-American countries. The European exchange control countries were strongly influenced by Germany. Countries accounting for a substantial share of world trade formed the second group, the sterling area. Finally there was a third group, to which free exchange countries could be counted, whose currencies were either defined in gold or were pegged to the U.S. dollar. Among this group and the countries of the sterling area, free movement of gold and free transfer of exchange continued, so that these two groups did not differ from each other as

much as they did from the exchange control countries.

Gold kept its role of medium for the settlement of international balances, but the great movement of gold in this period resulted mostly from political disturbances. An attempt of close international co-operation was made; however, toward the end, a true co-operation existed almost solely between Great Britain and the U.S.

Impact of World War II

In view of the long duration, intensity and extent of World War II it was not surprising that its impact on the international exchange markets was heavy. No country could escape its direct or indirect effects. The financial requirements of war were extremely great; yet the technique of war financing had been so developed that all major belligerent countries, with the exception of China, were able to avoid a high degree of inflation. All nations were determined to maintain stable exchange rates. In all countries involved in the war, exchange control was introduced or further extended except in the U.S., and free exchange markets nearly ceased operating. Foreign trade transactions were carried out more and more through official channels, greatly reducing private exchange dealings. The peacetime foreign trade was reduced to a minimum, the requirements of war having everywhere the absolute priority in exchange of goods. The position of creditor and debtor nations was greatly changed.

Before discussing the situation in various parts of the world, let us first sketch the main features of the wartime development of the foreign exchange markets in the important centres.

Great Britain introduced exchange control in the last days of Aug. 1939 and let the pound devaluate 14%. Most countries of the sterling area followed this devaluation of the pound. The British gold and dollar reserves were used for purchases in the U.S.; the payments for goods and services in various parts of the commonwealth could not be met from current income; a part of the British foreign investment was sold and heavy debts in pounds were incurred. The pound remained stable throughout the whole period, but this was only made possible by two factors: one was U.S. lend-lease and the other the financing of supplies and services within the sterling bloc by the accumulation of large sterling balances owing to the members of the bloc. The position of Great Britain as the world's greatest creditor nation was definitely altered.

Germany, dominating at one time the whole continent of Europe with only small exceptions, used the economic resources of the occupied nations as well as those of its allies for its wartime needs. The system of clearing agreements was extended nearly all over the continent, and by using this instrument and collecting the so-called occupation costs, Germany was able to extract from all European nations enormous amounts of goods and services, and to leave huge accumulated claims on the clearing accounts as payments for these supplies. Obviously the creditors would be able to collect very little of these clearing and other claims. The system used by Germany for financing its imports from European countries undermined the currency situation in most of them, leaving them either in a state of disorganized monetary condition or of a latent inflation.

The United States was the only big power which was able to maintain the unchanged value of its currency as defined in gold. It was not even obliged to establish a real exchange control since the control used by it was primarily

an instrument of economic warfare. In addition to financing her own wartime needs, the U.S. was able to supply lend-lease goods and services in the total value of \$49,000,000,000 to a number of its war allies, the principal recipients being Great Britain and the soviet union. The total reverse lend-lease received by the U.S. reached by Sept. 2, 1945, \$7,345,000,000, of which \$6,306,000,000 was from the British empire.

From the monetary point of view, the lend-lease supplies were very important in aiding to maintain stable exchange rates of a great many countries.

Special circumstances in China made it extremely difficult to preserve orderly currency conditions, and the end of the war found that country in the midst of a steadily growing inflation.

Japan attempted to organize a "co-prosperity sphere" in Asia as Germany had attempted a "new order" in Europe; the Japanese yen was made the dominating currency in all territories occupied by it. With 'Japan's defeat, this monetary organization ceased, and a new monetary order was being established in the far east.

In spite of their great economic difficulties, the neutral countries were able to increase their monetary reserves.

Monetary reserves substantially increased in the Latin-American countries as a result of a favourable balance of trade during the war. This development should have helped them to improve the international position of their currencies.

Also, the countries in the middle east improved their monetary reserves after the U.S. entered the war. Spending of dollars by U.S. troops and U.S. purchases of strategic material accounted for this fact. In addition, the middle east nations were able to accumulate substantial sterling balances.

Table III.—Average Value of Important Currencies in the Period 1939-Nov. 1941 (in U.S. cents per unit)

	Unit of Currency	June 1939	Sept. 1939	June 1940	June 1941	Nov. 1941
				May 1940		.,
Belgium	Belga	17.01	17.03	16.74	•	
	V	00.00		April 1940	?)	
	Krone	20.90	19.33	19.31		
Finland		2.06	1.90	1.98	2.01	
	Franc	2.65	2.27	2.01	20.07	
Germany	Reichsmark	40.11	39.91	39.97	39.97 Oct. 1940))
Greece	Drachme	0.86	0.76	0.65`	0.66	,
				(۸	Narch 194	1)
Hungary	Pengo'.'	19.70	19.16	1 <i>7</i> .59	1 <i>9.77</i>	
Italy	Lira	5.26	5.15	5.04	5.26	
			(May 1941	1)	
Netherlands	Gulden	53.1 <i>7</i>	53.21	53.08		
				May 1940	0)	
Norway	Krone	23.52	22.67	22.71		
				. (Nov. 1940	0}
Rumania	Leu	0.70	0.72	0.47	0.47	
	Peseta	11.02	10.49	9.13	9.13	
	Krone	24.11	23.78	23.80	23.83	
	Franc	22.55	22.58	22.46	23,20	
	L. Turk	<i>7</i> 8.98	76.65	67.17	76.48	
	Pound	468.24	399.59	403.50	403.16	403.42
Yugoslavia	Dinar	2.27	2.29	2.24	2.24	
	(free)	23.21	23.50	22.02	23.70	23.70
	Peso (official)	31.22	29 <i>.77</i>	29 <i>.</i> 77	23.69	23.58
Bolivia		3.29	3.24	2.49	2.40	2.15
Brazil		5.1 <i>7</i>	5.02	5.03	5.06	5.09
Canada	Can. Dollar	99.77	91.25	80.07	88.18	88.60
	(export)	4.00	4.00	4.00	4.00	4.00
Chile	Peso (official)	5.1 <i>7</i>	5.18	5.17	5.16	5.16
Cuba	Peso	99.88	99.95	90.	99.	1.00
Mexico		1 <i>9.77</i>	19.02	18.37	20.53	20.54
Peru	Sol	17.69	19.0	15.38	15.38	15.38
	Bolivar	31.50	31.71	28.17	31.34	29.85
Australia	Austr. Pound	373.13	318.4	322.80	321,25	321.43
China		13.44	6.70	5.76	5.33	
India		34.92	29.92	30.11	30.12	30.15
Egypt	Pound Egypt	480.20	409.84	369.4	413.5	413.8
Iran	Rial	5.82	4.96	5.84	5.84	3.08
Japan	Yen	27.28	23.46	23.43	24.37	25.08
New Zealand .	Pound (N, Zeal.) .	374.60	319.8	288.19	322.57	322.70
Siam	Bohi "	42.92	36.63	33.02	36.96	35.99
Philippines	Peso	49.82	49.83	49.83	49.81	49.79
Union of South						
Africa	Pound S.A	463.33	394.60	398.	398.	398.

The Sterling Bloc.—A quick perusal of Table III shows that most of the changes of currency rates in the first year of the war took place in the sterling area.

Great Britain introduced exchange control on Aug. 25, 1939; the rate of the pound declined officially by 14%. The sterling rate in New York on the "free market" fluctuated, while the so-called official rate was maintained at \$4.0350. The free rate was quoted at \$3.9301 in Dec. 1939; \$3.9634 in Feb. 1940; \$3.5236 in May 1940 (the lowest quotation being \$3.1000). With the approval of the U.S. treasury and the federal reserve authorities, a private arrangement was concluded between the British authorities and U.S. banks, which involved the blocking of U.S. investments in Great Britain, a severe limitation of the use to which U.S. sterling balances could be put, and the gradual extinction of the "free market" for sterling in New York Upon this arrangement the free sterling rate in New York recovered rapidly; it was quoted in August at \$3.9788 and in Oct. 1940 at \$4.0326. The extreme narrowness of fluctuations in free sterling in the spring of 1941 was taken as an indication of the firm control which the London authorities had acquired over the whole sterling area.

The devaluation of the pound was not followed by all nations which before the war were counted as belonging to the sterling area. Denmark, Estonia, Norway, Latvia, Sweden and Iran pegged their exchange rate to the U.S. dollar. The British nations, as well as Portugal, Egypt and Siam let their currencies depreciate in Sept. 1939.

The sterling area was completely transformed. As mentioned above, it was left by most of the non-British nations; exchange control was initiated and the sterling area or bloc became a unit for exchange control purposes. It acquired an exact definition. Its membership was extended during the war, and almost throughout this whole period it consisted of the British commonwealth and empire (except Canada and Newfoundland), British mandated territories, British protectorates and protected states, Egypt, the Sudan, Iraq (except for a few months in 1941), the Belgian Congo, the Ruanda-Urundi and the Faeroe Islands. During 1941, the sterling area was widened by the Free French territories in Equatorial Africa, French Oceania and French establishments in India, and in 1942 by Syria, Lebanon and Iceland. In Feb. 1944 the French overseas territories, Syria and Lebanon were placed outside the sterling area, and in Oct. 1944 the Belgian Congo and the mandated territory of Ruandi-Urundi were removed.

Here the agreement which was concluded between France and Great Britain on Dec. 12, 1939, should also be mentioned. Although France did not become a member of the sterling bloc, the agreement itself supported the policy of this bloc indirectly. The rate between the two currencies was fixed at fr. 176.625 to £1, and later this rate applied also to the Free French territories. Under the agreement, the problem of sharing equitably the expenses which were necessitated by the conduct of the war and which had to be defrayed in gold and dollars would be kept under review. The francs required by Great Britain (including those for the British expeditionary forces) were to be provided against payment in sterling, and sterling required by France (including those required for the purchase of raw materials in the British empire) would be provided against francs. In July 1941 a financial agreement was signed with the U.S.S.R. establishing a centralized clearing account at the Bank of England in the name of the State Bank of the U.S.S.R. The rate applied was f_1 = roubles 21.38, corresponding to roubles 5.03 = \$1.

The fact that the pound-dollar rate remained at about the same level (£1-\$4.021/2-4.031/2) throughout the war

helped to maintain order and stability in the international exchange situation, the influence being felt throughout the dollar and sterling areas.

By the end of 1940 the British government had established virtually complete control over Britain's foreign exchange transactions. This objective was attained through an extensive series of payments and clearing agreements which resulted in sectionalizing the British exchange market and in canalizing its international economic and financial transactions. Throughout the whole sterling area, the same rules were applied to the transfer of sterling into dollars or other "hard" currencies. With outside free currency countries-Switzerland and the U.S.-Britain employed "registered" accounts; with most other countries outside the sterling area, "special" accounts; with countries inside the area, sterling exchange for residents and sterling area accounts for nonresidents. All of these accounts were strictly bilateral, except for the last category, which was fungible as among the various countries of Central America.

The exchange control system was somewhat liberalized in 1943 to simplify administration. The "registered" accounts, sterling area accounts and the prewar accounts were all merged into one category under the heading "registered" accounts. In July 1945 the exchange control was further simplified. "Registered" accounts in sterling for residents of the U.S. and for residents of Central American countries were discontinued. Sterling on these accounts were freely transferable to any other "Americas" account and were convertible in dollars at the official rate of the day. Until Sept. 30, 1945, they were exchangeable into dollars at \$4.021/2.

As to the exchange rates of other British members of the sterling bloc, the Australian pound, after some fluctuation of the "free" pound during the first year of the war, maintained a stable rate of \$3.2280. The New Zealand pound fluctuated greatly throughout 1939–40. It reached the rate of \$3.2274 in Sept. 1940 and remained stable at that rate. The South African pound had shown great stability during the war, its rate being \$3.98–4.0050. The rate of the Indian rupee declined from 34.92 cents in June 1939 to 29.93 in Sept 1939, and after 1940 was maintained stable at the rate 30.122–30.182 cents.

The nations of the sterling area during the war had to mobilize and pool their resources of gold and dollars. The reason for this dollar pool was the extreme dollar shortage, which arose mainly from the fact that Britain and other sterling area nations made large cash purchases of war goods in the U.S. Between Sept. 1939 and March 1943 Britain alone spent more than \$6,000,000,000; to pay for these goods it mobilized and sold most of its dollar resources.

At the beginning of the war all Britons had to surrender to the government their holdings of foreign exchange (bank balances and currency) payable in the U.S. Later on, other foreign exchange had to be surrendered. Compensation was paid in pound sterling. All residents in Great Britain had also to register all their holdings of securities of which the principal or interest was payable in U.S. dollars. The British policy was dictated by its military situation, which changed completely in 1940. Its production was insufficient to sustain its military effort. It needed large supplies of armament which could be obtained only in the U.S. To pay for these munitions it took over the U.S. investments of British citizens, compensating the owners in sterling, and sold all of those which were marketable in the U.S. for dollars. A few months later the dollar resources were almost exhausted, and only the Lend-Lease act assured Britain of a continuing supply of munitions and other essential requirements from the U.S. despite the exhaustion of its dollar resources. It enabled Britain to increase the size of its armed forces and to concentrate on war production, reducing its exports drastically. But Great Britain needed many goods and services from the U.S. which were outside the scope of lend-lease. In 1944 Britain and other sterling area nations spent more than \$1,000,000,000 in the U.S., at the same time when British exports were reduced to 31% of the 1938 volume. The dollar shortage was partly eased when expenditures of the U.S. armed forces in the sterling area became larger.

Shortly after the beginning of the war, the sterling area countries entered into an agreement to pool their resources of foreign exchange. All nations undertook—as most of them had been doing before the war—to sell their foreign exchange income to Britain and thus to maintain the whole of their reserves in the form of sterling assets. (The Union of South Africa continued to hold gold, and its gold reserve increased from \$220,000,000 in Dec. 1938 to \$982,000,000 in Dec. 1945.) They also agreed to be sparing in their use of dollars in order to reserve them for the purchase of essential supplies from the U.S. Britain promised to supply from the pool the dollars and other currencies required for the essential imports of the member countries.

The main feature of the dollar pool arrangement was the agreement of the sterling area countries to limit their demands upon the pool to their really essential needs. But each nation remained responsible for its own import program. Whenever a nation granted to its nationals licences for imports from the U.S., the dollars were allocated by the pool. Co-ordination of the operation of the various exchange controls was attained by constant discussion and exchange of information between members. One of the most important aspects of the sterling area during the war was the piling up of credit balances of the member countries in Great Britain itself in return for goods and services supplied to her.

The sterling balances arose in three distinct ways. First, Britain imported much of its food and raw materials from sterling area countries; for these purchases the nations sold it the necessary amount of their own currencies in exchange for sterling. Second, Britain made huge payments for military purposes inside the sterling area countries, particularly the middle east and India. (British wartime expenditures in India under a special agreement made in Nov. 1939 totalled about \$4,124,000,000 up to April 1945.) Third, a part of the sterling balances resulted from net sales of dollars to Britain by other sterling area nations under the pooling agreement.

The sterling balances could be drawn upon for purchases within the sterling area. Moreover, they could be used to pay off sterling debts owed by the nation concerned. As a matter of fact, the sterling balances would have been even higher had it not been for a substantial repatriation of British investments in the sterling area countries.

The British balance of payments was maintained and the rate of exchange was supported by four sources of supplies from abroad. The greatest as to amount was the U.S. lend-lease aid for the British empire, which reached a total of \$30,750,000,000, as compared with \$6,306,000,000 of reverse lend-lease aid; lend-lease exports to Great Britain totalled \$13,879,000,000; the Canadian grant in

aid amounted to Can. \$2,000,000,000; the sale of British foreign investment—disinvestment; newly contracted loans and the accumulated sterling balances.

The total amount of British disinvestments abroad during the war was $f_{1,118,000,000}$, divided as follows:

In sterling areas564
Dominions, not including Canada201
India, Burma and middle east348
Colonies and other sterling area countries 15
United States203
Canada225
South America
Europe
Rest of world

The total external liabilities reached £3,355,000,000 in June 1945, compared with £476,000,000 in Aug. 1939. The sterling balances increased during this period from £476,000,000 to £3,052,000,000. Total external disinvestments from Sept. 1935 to June 1945 amounted to £4,198,000,000.

The external liabilities, according to the White Paper of Dec. 1945, were divided as follows:

Sterling area	f million	
Dominions	384	
India, Burma, middle east	1,732 }	2,723
Other sterling area countries	607	
North and South America	303)	
Europe	267 }	632
Rest of world	62	·

Of the sterling balances outstanding on June 30, 1945, roughly £1,070,000,000 were owed to India; £350,000,000 to Egypt; £170,000,000 to Eire; £115,000,000 to Australia; £110,000,000 to Palestine; £100,000,000 to Malaya; £63,000,000 to New Zealand and £27,000,000 to South Africa. A sizable amount was owing to British colonies. Among the non-sterling countries, Argentina held a balance of £105,000,000, followed by Portugal with about £90,000,000. Brazil and some Latin-American countries held smaller balances.

India, the greatest creditor of sterling balances, repaid or repatriated also the greatest part of her foreign indebtedness. About £300,000,000 of India's sterling debts had been repaid or repatriated by 1946; practically the whole public debt had thus been eliminated. British commercial and industrial investments in India were estimated at about £250,000,000.

Egypt, Iran, Iraq as well as Palestine, were able to repay debts. South Africa repatriated public bonds from London. It seemed that all empire countries were now creditors of Great Britain with the exception of Australia and New Zealand.

Great Britain entered World War II with £605,000,000 net gold and U.S. dollar reserves and it possessed foreign investments estimated at £4,000,000,000. Up to June 30, 1945, it sold £1,118,000,000 of external capital assets, its foreign liabilities increased by £2,880,000,000, and it had £453,000,000 of gold and U.S. dollar reserves. Its creditor position had been basically altered and the structure of its balance of payments had changed. Its postwar import requirements of food, raw materials and machinery to replenish its depleted stocks added to the magnitude of its task of monetary reconstruction.

As already mentioned, the position of the British dominions developed differently. Canada, similar to India and South Africa, was able to reduce its external indebtedness by Can. \$1,500,000,000. In general, the war changed the financial interrelations among the countries of the British commonwealth.

Continental Europe.—Germany's military successes during the first years of World War II enabled it to extend its rule over a great part of the continent, so that by 1942 only very few countries remained outside direct German economic domination. These countries were Switzerland, Sweden, Portugal, Spain and Turkey. The occupied as well as the satellite nations were made a part of the continental economy directed by Berlin. The German mark became its key currency. Germany had already an established relation between the mark and the currencies of its allies—Hungary, Bulgaria, Rumania and Italy—previously determined in the respective clearing agreements; now the currencies of the occupied nations were brought in a fixed relation to the mark.

In the occupied countries in western Europe Germany fixed the following rates:

Rate in national	Rates of	Rates of
currency for RM. 1	May 9, 1940	April 1, 1941
Norway in crowns	1.76	1.76
Denmark in crowns	2.07	2.07
Holland in florins	0.75	0.75
Belgium in belgas	2.39	2.50
Luxembourg in francs	9.57	10.
France in francs	17.84	20.

With the exception of France, the rates followed almost the previous parity of the free mark, which was greatly overvalued.

From April 1, 1941, full freedom of payments was established between Holland and Germany, including the right to bring notes and other means of payment from one country to the other. The Dutch-German clearing ceased to operate as far as payments between the two countries were concerned but remained in force with regard to payment between Holland and third countries. In Luxembourg the reichsmark alone was made legal tender from Jan. 1941. In March 1941 the reichsmark alone was declared legal tender in Alsace and Lorraine, and the two provinces were incorporated into the German currency system. In Jan. 1942, the Danish crown was appreciated by 8.2% so that the pre-Sept. 1939 relationship between the German and the Danish currency was established.

In 1940 and 1941 negotiations were carried out between Germany and the Danubian countries for the purpose of bringing the rate of the reichsmark more into line with the quotations of the dollar, Swiss franc and other "free currencies." Through a series of changes in the latter half of 1940 the discount of the reichsmark on free currencies had been limited to a maximum of about 20%. This was done so that in some cases the premiums applicable to the reichsmark had been raised, in others the premium on the sale or purchase of the free currencies was reduced, and finally the combination of both methods was employed. In 1941 further steps were taken to eliminate the discount on the reichsmark; here again the methods varied from country to country. The changes are summarized as follows:

			July 1, 1940			April 1, 1941			April 1, 1942			
			Swiss fr.		% pre- mium of Sw. fr.	Swiss	0	pre- mium f Sw.	Swiss		% pre- mium of Sw.	
						fr.	RM.	fr.	fr.	RM.	fr.	
Bulgaria						23.78	32.75	20	19.02	32.75	0	
Greece	•		34.20	46.50	23	34.20	48.50	18	34.20	60.	-2	
Hungary						1.19	1.66	19	0.98	1.66	2	
Rumania	•	•	48.27	49.50	42	44.	59.50	22	44.13	59.50	22	
Yugoslavia (Serbia, C				14.80	33	12.63	17.82	18	11.60		0	

Only Rumania did not adopt a uniform valuation of the RM. and hard currencies, even in 1942. In March 1939, when Czechoslovakia was annexed, the rate between the reichsmark and the Kč. was fixed at 10 Kč.=1 RM. (instead of the previous quotation of 11.62 Kč.=1 RM.). In relation to other currencies the old rates were retained; this meant, for instance, that the dollar continued to be quoted at Kč. 29.25 instead of Kč. 25, as would have been the case if the dollar rate were calculated via the RM. This disparity ended on Oct. 1, 1940, upon the abolition of the customs frontier between Germany and the protectorate of Bohemia and Moravia. The same day the exchange relation between the protectorate crown and the Slovak crown was altered from 1 K.=1 Ks. to K. 10=Ks. 11.62.

After the occupation of Poland and Yugoslavia, the monetary system of these countries was entirely reorganized.

The Ukraine Central bank, established in March 1942, issued the carbovanez. A bank of issue called "The Ostland Central Bank" was opened in Riga in April 1943.

The official rate of the Italian lira had been reduced in Sept. 1931 from \$5.261/4 to \$5.05=Lit. 100, but at the end of May 1941 it was raised again to \$5.261/4. This raising of the lira rate on the dollar was followed by corresponding adjustments in the rates of a number of other currencies (including the reichsmark, the Swiss franc and the Swedish crown). The rate between the lira and the reichsmark was fixed at Lit. 7.63=RM. 1. This rate was maintained until after the surrender of Italy in the fall of 1943, when the rate Lit. 10=RM. 1 was established for that part of Italy occupied by Germany.

Germany made great efforts to hold the stability of the exchange rates in all countries under its domination. It maintained these rates even in its clearing agreements with southeast European countries whose prices went up sharply, because it was not possible to check the evergrowing inflation.

With the increasing all-out economic mobilization, Germany's pressure on the economies of the European nations became more and more rigid. It tried to exact from them the largest possible amount of goods and services without being able to supply them with the commodities they needed. Pursuing this policy, Germany organized a central clearing "Verrechnungskasse" in Berlin, to which 17 out of 20 countries in continental Europe were linked, the remaining three being Portugal, Spain and Turkey. This central clearing office, planned as a multilateral clearing system, centred around the reichsmark, and dominated the flow of trade and foreign payments on the continent until 1944. The major part of trade of the European nations was transacted with Germany, the remainder with the other nations in the nazi orbit. With the possible exception of Finland, Norway and Slovakia, exports to Germany exceeded imports. France dealt with Belgium, Holland and Norway through Berlin, but concluded transactions with other countries directly. Norway dealt directly only with Sweden and Denmark; even the mutual payments between Bulgaria and Rumania were cleared through the Berlin central office. Nearly 75% of foreign trade of Switzerland and more than 80% of that of Sweden were paid via clearings in 1942.

The tendency of Germany to run into debt on clearing accounts was intensified during 1942. Clearings ceased largely to serve their original purpose of equalizing incoming and outgoing foreign payments and became a credit device by which a government advanced the funds necessary to enable its country's export trade to continue even when no adequate countervalue was obtained from the importing country.

Thus Germany made use of the resources of other countries through the mechanism of clearings and also through contributions levied to meet occupation costs. It was evident that this procedure developed inflationary pressure in these "creditor" nations.

Germany's clearing debts and assimilated accounts amounted in Sept. 1944 to RM. 31,500,000 divided as follows (in millions of RM.): France, 8,000; Holland, 5,750; Belgium, 5,370; Denmark, 3,360; Hungary, 980; Rumania, 900; Bulgaria, 1,200; Slovakia, 500; Bohemia and Moravia, 4,600 and Switzerland, 600.

The occupation costs paid to Germany by all countries reached in Sept. 1944 the total of RM. 84,000,000,000, out of which France alone paid RM. 35,250,000,000. Altogether, Germany obtained in a little over four years—from June 1940 to Sept. 1944—about RM. 123,000,000,000, calculated at the official rates; about two-thirds of this amount was exacted as a levy to meet occupation costs, while the remaining third, around RM. 40,000,000,000 left behind a German debt, usually in the form of liabilities or clearing accounts.

Thus Germany organized a kind of forced lend-lease for herself among the European countries, greatly disrupting the monetary structure of her creditors.

The Neutral Countries.—As could be expected, the monetary position and the monetary reserves of the neutral countries improved during the war. Following are the figures concerning the gold reserves of these countries (in millions of dollars):

	Dec. 1939	July 1945
Switzerland	701	1,073
Sweden	308	478
Turkey	129	234
Spain	••	109
Portugal	69	6ŏ

In addition, the dollar and sterling balances of these countries also increased, especially in Spain, Portugal and Turkey. The development of the exchange rates is shown below (in cents per unit of foreign currency):

Sept. 1938 1940	Sweden 25.48 23.802	Switzerland 22.97 22.58 22.676	Portugal 4.42 3.66 3.711	Spain 5.60 10.49 9.32
1941 (average of daily rates for part of the time during which quotations were		·	0.	• •
certified)	23.829	23.210	4.00	9.130
Feb. 1946	23.852	23.363	4.05	9.132
July 1946	26.195	23.363	4.05	9.132

While the rate for the Swedish, Swiss and Portuguese currency showed only little change in the first postwar year—compared with the prewar quotations—the Spanish peseta declined by more than 10%. Sweden introduced exchange restrictions in Feb. 1940; at first they were mainly designed to control capital movements but were also used as a means to control imports, especially in the spring of 1940.

In Switzerland, the year 1940 was characterized by unusually strong movements on the foreign exchange market. In the first half of the year, the national bank and the Equalization fund furnished the market with dollars to an equivalent of nearly Swiss fr. 500,000,000 to pay heavy imports and to meet withdrawals of funds owned by foreigners. In the second half of the year the trend was reversed, and the national bank added nearly Swiss fr. 650,000,000

to its foreign exchange holdings. The main reason for this movement was the fear that Swiss assets in the U.S. would be placed under the licensing system by the U.S. government. Switzerland had not introduced exchange restrictions, yet an informal arrangement took place between the national bank and the other banks. The national bank demanded information as to the origin of the foreign exchange offered to it. The bank was anxious to prevent blocked dollars from being liquidated through the Swiss market, but it accepted all exchange resulting from Swiss exports or representing repatriation of funds in Swiss ownership. At the same time, sales of exchange for foreign investments were also controlled.

The rate of exchange of the dollar in Spain had been raised from pesetas 9.00 to pesetas 9.90=\$1 in Sept. 1939; in April 1940 the dollar selling rate was pegged at pesetas 11.22. When a "special account" for Spain was opened in London, the free market quotation for the peseta was discontinued in London and was replaced by the Bank of England clearing rates; that is, an official rate of pesetas at 40.50 = £1 and a so-called "voluntary rate" of 46.55.

When World War II started, the Portuguese escudo was pegged to the pound at the rate of Esc. $110=\pounds1$. In Nov. 1939 the escudo was related to the dollar at the maximum rate of Esc. 27.50=\$1, while the rate of the pound was fixed at Esc. 108.25=£1. When the free sterling rate recovered in the summer of 1940, the escudo was pegged to the pound as from Aug. 1, 1940, at a rate of Esc. 99.50=100.50=£1, corresponding to a dollar quotation of about Esc. 25=\$1. The exchange market remained free from official restrictions, but the Bank of Portugal maintained contact with the commercial banks to ensure collaboration with the general aims of the bank's monetary policy.

As the influx of dollars into Switzerland continued, the National bank asked the Swiss banks in Jan. 1941 to offer the bank only such dollars as belonged to persons domiciled in Switzerland. The Swiss National bank wanted to avoid the increase of its dollar reserve on account of financial transfers. The national bank paid for dollars which it absorbed a minimum of Sw. fr. 4.30, the convention with the banks providing for a range of rates from Sw. fr. 4.23–4.33. Dollars of which the Swiss owners might dispose but which were not bought by the banks (such as income from dividends) might still legally be dealt in on the market. These transactions were often settled via New York at a rate sometimes about Sw. fr. 3.30.

In Sweden, the Central bank maintained a fixed dollar rate of S.K. 4.20, absorbing all the dollars offered to it. The exchange control was applied very liberally.

Also in 1942 the Swiss authorities had to deal with the problem of absorbing large offers of dollars which were subject to the freezing provisions imposed in the U.S. The bank monetary reserves were steadily increasing. In 1942 three-quarters of the Swiss foreign trade was carried through clearing accounts with Europe. Only with Sweden and Portugal were payments freely made. Switzerland resisted the temptation afforded by New York premiums on francs (rates as low as Sw. fr.=\$1 were occasionally quoted in New York) to raise the officially pegged rate, preferring to combat rising domestic prices by taxing exports and applying the proceeds to an import subsidy. In Aug. 1942 an export embargo was placed on gold.

The foreign exchange position of Spain was so strengthened in 1942 that the so-called voluntary rates which had been quoted in addition to the official exchange rates were abolished. (For instance, the reduction to the dollar was

from the "voluntary" rate of pesetas 12.56 to 10.95, for sterling from 46.55 to 40.50 official rate.)

The Bank of Portugal decided in June 1942 to reintroduce the circulation of gold in the form of the new coin, the dubray, equalling 1,000 escudos.

Turkey likewise exploited an appreciation of its standard on Aug. 5, 1942; the import premiums paid for "free currencies" were reduced, but the export premiums were retained at former levels to combat rising domestic prices and to counterbalance the extensive foreign claims against Turkey. During 1943 Turkey was the smallest participant in Europe's German trade. Agreements concluded with the German group were little more than isolated barter pledges, generally providing for the shipment of German goods prior to the execution of Turkish sales.

The growing military power of the Allies strengthened the bargaining position of Sweden and Switzerland with regard to Germany. Both countries had clearing agreements with Germany. The Swedish credit to Germany was strictly limited as to time and amount. In 1941 the Swedish Reserve Stock office made a credit of Kr. 100,000,000 available to the clearing office to finance exports to Germany until the end of 1941. Credits granted directly to the Swedish exporters were partially insured by the Government Export Credit office. The total of official and private credits outstanding at the end of 1942 amounted to Kr. 70,000,000. No new credits, official or private, were granted in the first half of 1943. Sweden refused to accept German gold and in an agreement of 1944 demanded anticipatory payments.

In July 1941 the Swiss government gave guarantees to the exporters, within the scope of the clearing agreement with Germany, up to the credit amount of Sw. fr. 400,000,000, while a further Sw. fr. 400,000,000 would be made available for the period up to the end of 1942. (A total equivalent of RM. 465,000,000 at the official rate RM.= Sw. fr. 1.76). The waiting time for Swiss exporters was limited to three months.

No definite result was achieved in negotiations for the renewal of the clearing agreement expiring at the end of 1942. Clearing was maintained and it was decided that the Swiss exporters might avail themselves of such balances as had remained unutilized in the previous credit.

The Swiss clearing agreement, which expired on Jan. 15, 1943, was renewed late in the year only after long negotiations. In the interim, a de facto clearing system for a limited volume of trade was maintained, and the federal guarantee on clearing claims lapsed. Ultimately a trade agreement which approached more closely bilaterally balanced exchanges was concluded in Oct. 1943.

In Oct. 1944 the Swedish exchange regulations was tightened to prevent a major influx of foreign exchange from abroad.

The liberation of France in 1944 stopped trade between Germany and Spain and Portugal. Both the latter countries derived great profits from the economic warfare conducted in their territory, the Allies as well as Germany attempting to buy strategic commodities often regardless of price.

Sweden further reduced its trade with Germany, partly under Allied pressure. Somewhat more difficult was the position of landlocked Switzerland, which was dependent on Germany and the countries controlled by Germany for many vital supplies.

The United States.—The strong technical position of the U.S. dollar was not weakened by the war, although extremely heavy demands were imposed upon the U.S. economy. The U.S. was the only major country whose cur-

rency's ratio to gold remained unchanged from the prewar period. The treasury's buying price for gold was \$34.9125 (\$35 less 1/4%) per one fine ounce, the selling price was \$35.0875 (\$35 plus 1/4%) per one fine ounce. The gold reserve at the end of the war amounted to \$20,088,000,000 as compared to \$17,644,000,000 in Dec. 1939.

The U.S. did not introduce foreign exchange restrictions in the proper sense of the term. The number of foreign exchanges quoted on the New York exchange market, however, was steadily reduced as a result of war.

The country had to mobilize all its resources and spend enormous amounts to meet all war requirements. In addition, it was able to supply its allies with a huge amount of goods and services through lend-lease. It emerged from the war as potentially the biggest creditor nation.

During the first year of the war, great orders for ammament were placed by Great Britain under the "cash and carry" provisions. Of the total gold and dollar resources of Great Britain, amounting to nearly \$4,500,000,000 on the outbreak of hostilities, rather more than one-half had been utilized by the end of 1940. The U.S. foreign trade showed in 1940 an export surplus of \$1,396,000,000. This, plus continuous flight of capital seeking a refuge, was responsible for a further increase of the gold reserve from \$17,644,000,000 in Dec. 1939 to \$21,999,000,000 in Dec. 1940. It increased to \$22,726,000,000 at the end of 1941.

Special loans granted by the Export-Import bank and the Exchange Stabilization Fund assisted several countries in Latin America and also China in promoting stability of their exchange rates. By an executive order of April 10, 1940, the U.S. began to freeze the gold and dollar resources of different countries. This measure was designed to protect the assets in the U.S. which belonged to governments and nationals of invaded European countries, from seizure by the invader. Such assets were available for payments only with the consent of the treasury; the measure developed soon to an important instrument of economic warfare. In 1940 the assets of the following countries were frozen: Norway, Belgium, Holland, Luxembourg, France, Estonia, Latvia, Lithuania and Rumania. The currencies of the "blocked" countries ceased to be quoted on the New York exchange. During the early months of 1941, Bulgaria, Greece, Hungary and Yugoslavia were added to the list; on June 14, 1941, the assets of Finland, Germany, Italy, Portugal, Spain, Sweden, Switzerland and all other countries on the continent of Europe were made subject to freezing.

On July 25, 1941, the U.S. freezing control was extended to non-European countries. Assets of Japan and China were blocked—the latter at the specific request of the Chinese National government. This step was clearly an aggressive measure taken at that time to react to further Japanese occupation of Indo-China. Its principal effect was to bring trade between the U.S. and Japan to a complete stoppage. On Dec. 9, 1941, Siam was added to the list of countries whose assets were frozen.

An executive order of Dec. 26, 1941, provided for automatic freezing of the assets of any territory in the event of its being occupied by countries at war with the U.S.

According to the mechanics of the U.S. foreign fund control, transactions affecting assets of blocked countries and their nationals were prohibited except as specifically authorized in the regulations and licences issued by the U.S. treasury. Special licences were usually issued if there was reasonable certainty that the axis would not benefit from the transaction for which the licence was requested, and if it appeared that the blocked national would suffer were the licence denied. General licences were issued to

cover transactions which, because of their nature and of some characteristic of the owners, could be treated as a class. General licences were obtained by Sweden, the Swiss National bank, Spain and Portugal.

When all countries on the continent of Europe became subject to "freezing," the dollars could not be used for paymens to them. The dollar had, in fact, even before the U.S. entered the war, ceased to serve as medium for international settlement in Europe; instead, greater use was made of gold. The last vestige of the international character of the dollar disappeared.

In 1942 Foreign Funds Control applied to more than 35 countries, including the whole of continental Europe (except Turkey), China, Japan and the countries occupied by Japan. The "frozen" assets consisted not only of bank deposits, gold and securities, but also of a great number of business enterprises as well as patents and other forms of property. The Foreign Funds Control was carried out by an organization created within the treasury department. Much of the field work which concerned licences to effect transactions subject to the control was delegated to the federal reserve bank.

In order to provide the information necessary for the administration of the control, a census of all foreign property subject to the jurisdiction of the U.S. was taken by the treasury department. Reports on nominal ownership both as of June 1, 1940, and of June 14, 1941, were required. The total value of the property reported in the census was in excess of \$13,000,000,000. The blocked funds held in the U.S. in 1943 amounted to about \$8,500,000,000. In 1944 a census taken of U.S. owned property abroad showed the existence of such property valued at more than \$14,420,000,000.

In Aug. 1944 the Argentine gold holdings were frozen. On March 13, 1942, the treasury department took action to control the importation of foreign and domestic currency into the U.S. from any blocked country not falling within the general licence trade area or from nationals of axis and certain other countries. Upon importation, such currency had to be forwarded immediately to the Federal Reserve bank in New York, and was held by the Federal Reserve bank until the treasury department authorized its release. As a result of these limitations in the free transfer of notes, dollar notes were quoted in Europe well below par. In the spring of 1942 the rate in Switzerland went down to Sw. fr. 2=\$1.

In addition to the freezing of assets held in the U.S., the blockade of the axis was tightened further by the issuance on July 17, 1941, of "the Proclaimed List of Certain Blocked Nationals." This list and supplementary lists contained the names of suspected, unfriendly persons and firms in Latin America which were to be considered as blocked nationals under the provisions of the above mentioned executive order. Late in 1943 the unpublished list of "Special Blocked Nationals" was compiled, and two important semipublic banks in Argentina, the Banco de la Nación and the Banco de la Provincia de Buenos Aires, were appended to that list. In Aug. 1943 a prohibition was placed on the importation of cheques, bills of exchange and promissory notes from all blocked countries excepting China.

In co-operation with the American Commission for the Protection and Salvage of Artistic and Historic Monuments in War Areas, steps were taken in 1944 to make sure that the axis would not be able to dispose of looted art objects on the U.S. market. The main objective of all

these provisions was not to protect the rate of the dollar; they were weapons of economic warfare and measures to keep the property of the countries occupied by the axis powers safe.

The demand for armament supplies of the U.S. increased greatly after the defeat of France and became steadily intensified with the long duration and geographical extension of the war. Yet the Allied nations did not possess dollar and gold reserves ample enough to pay for the needed supplies. Instead of granting loans as during World War I, a new instrument was used this time. On March 1, 1941, the Lend-Lease act was passed, which provided for the furnishing of war materials, food and other supplies to nations "whose defense the President deems vital to the defense of the United States." Although the Lend-Lease act was originally contemplated to assist Great Britain, whose dollar and gold reserves were nearly exhausted at that time, lend-lease supplies were extended to the soviet union in July 1941, and later to practically all United Nations, even to some nations who were not belligerent (for example, Turkey). Canada did not accept any lend-lease supplies and concluded a special agreement with the U.S.

Commercial trade during 1943-45 ended with a total import surplus of more than \$2,000,000,000. The gold reserve of the U.S. decreased from \$22,726,000,000 in Dec. 1942 to \$20,065,000,000 in Dec. 1945 or by \$2,661,000,000. The import surplus in commercial trade was one reason for the gold export and for increasing foreign owned dollar balances. Over the five years from July 1, 1940, through June 30, 1945, the U.S. government spent abroad \$13,045,000,000, of which \$4,000,000,000 to \$5,000,000 was spent to purchase vitally needed food and raw materials. A similar amount was spent to pay U.S. troops overseas. The government agencies held abroad more than 3,000 installations, acquired at a cost of \$2,413,000,-000, of which 95% were military installations. Out of the total disbursements abroad of \$13,045,000,000, \$6,375,000,ooo went to the British commonwealth, \$3,326,000,000 to the American republics, \$986,000,000 to China, \$541,000,-000 to France and its possessions and \$127,000,000 to Italy and its possessions.

The magnitude of the lend-lease exports and the total foreign trade figures of the U.S. for 1941-45 is indicated as follows (in millions of dollars):

		Export	Exces Import Exces	s of	exports +
1941	Total	5,147	3,345		1,802
0.	Lend-Lease	740	3.515		
	Commercial	4,406		+	1,061
1942	Total	8,079	2,744	+	5,334
• -	Lend-Lease	4,932			
	Commercial	3,147		+	402
1943	Total	12,964	3,381	+	9,583
	Lend-Lease	10,357			• • • •
	Commercial	2,606	• • •		775
1944	Total	14,257	3,920	+	10,337
011	Lend-Lease	11,305	•		
	Commercial	2,952			969
1945	Total	9,806	4,136	+	5,670
0.10	Lend-Lease	5,561	• • • •	•	
	U.N.R.R.A.	355			• • •
	Commercial	3,874			262

As already mentioned, total lend-lease aid reached \$49,096,000,000 by Dec. 31, 1945. Lend-lease exports totalled \$32,872,000,000; Great Britain obtained \$13,879,000,000;

the soviet union \$9,553,000,000; members of the British empire \$4,567,000,000; Egypt \$20,028,000,000.

The expenditures of the U.S., including those for the growing number of U.S. forces stationed abroad, strengthened the monetary situation abroad and especially the dollar position of many countries. The growth of foreign dollar resources in 1943 and 1944 was the largest since 1935, while more gold was earmarked in the U.S. on foreign accounts than in previous years in spite of a gold export from the country. Dollar balances of countries other than the U.S. increased from \$3,500,000,000 in Dec. 1941 to \$5,510,000,000 in June 1944, and there was a further increase in 1945.

At the end of 1941 gold reserves of countries other than the U.S. totalled \$10,800,000,000; in June 1945 they were \$16,400,000,000—an increase of \$5,600,000,000. Thus, as the result of the wartime development and the policy of the United States, the gold and dollar reserves of other countries were substantially higher at the end of the war than they were at its beginning. Their geographical distribution had of course changed greatly; Europe as a whole was the great loser.

In the autumn of 1945 the gold and dollar holdings of countries other than the U.S. were reported to have approached a figure of \$30,000,000,000; but this total included assets outside the monetary reserves of central banks and governments.

Even during the war it was evident that the U.S. dollar, whose technical position remained very strong, would become the basis of a new international monetary standard.

Canada.—Although not a member of the sterling bloc, Canada depreciated its currency at the outbreak of World War II. The Canadian dollar went down on the New York market from 99.77 in June 1939 to 91.25 in Sept. 1939, reached the low level at 80.07 in June 1940, and became rather stable in 1941. The average New York buying rates were as follows: 1941–87.345; 1942–88.379; 1943–89.978; 1944–89.853; 1945–90.485.

The Canadian dollar regained its stability on a lower level practically after 1942. The relation to the pound remained stable throughout the war fixed at £1 = Can. \$4.43-4.47.

Exchange control was introduced in Sept. 1939. The exchange restrictions were tightened in 1940 and were supported by import control based on the War Exchange Conservation act of 1940. In 1941 travel abroad was prohibited except by permission of the Foreign Exchange Control board, and prepayment for imports was restricted. In 1942 the exchange control so far as relations with the U.S. and the sterling area were concerned could be somewhat liberalized. Import of gold was made subject to a licence.

In 1943 the foreign exchange position showed a strengthening; a great change in the U.S. dollar position was disclosed in April 1944, when a revision of the financial arrangements of the Hyde Park Declaration of 1941 was announced. During 1943 Canada's supply of U.S. dollar exchange increased beyond expectations and a series of measures was taken to reduce Canada's holdings in U.S. dollars to an agreed range. These measures included payments to the U.S. for the construction of airfields built in Canada by the U.S. government. Furthermore, schedule I of the War Exchange Conservation act prohibiting and restricting imports from nonsterling areas was repealed. A relaxation of exchange regulations made allowance for a limited increase in pleasure travel of Canadians into the U.S. Throughout 1944 an influx of capital to Canada continued, net sales of securities to other countries reached

in that year about \$97,000,000 and amounted to a net capital influx of Can. \$436,000,000 in the period 1939 to 1944. The principal item was the large volume of sales of Canadian bonds to the U.S. Tourist restrictions to the U.S. were further relaxed.

The chief problem which confronted Canada in its balance of payment was that it formerly had an export surplus with Great Britain which had gone a long way toward meeting its deficit with the U.S. It was obvious that Great Britain would now need a much larger supply of goods from Canada, but that it would not be able to pay the import surplus in gold or U.S. dollars. A further deficit in the Canadian balance of payments with the U.S. was expected. Canada increased the production of a great number of goods and introduced a very well-functioning price and wage control. Canadian supplies became an important item for the prosecution of war. The expansion of Canadian export is clearly shown in the following figures (in Can. \$ million):

Export	Total	To Great Britain To	United States
1939	1,897	331	336
1940	1,186	532	416
1941	1,638	702	573
1942	2,364	742	886
1943	2,971	1,033	1,149
1944	3,444	1,235	1,300

Canada supplied the U.S. with numerous strategic commodities in increasing quantities.

The assistance given by the Canadian government to Great Britain for British purchases in Canada was of great significance. The British deficit up to the end of 1940 amounted to Can. \$610,000,000; of that amount Can. \$250,000,000 was paid in gold (an amount approximately equivalent to the cost of material Canada had to buy in the U.S. in order to carry out British government contracts); the balance of Can. \$360,000,000 was covered by the repatriation of Canadian debts in sterling and the accumulation of sterling balances. From Jan. 1941 until March 1943 no more gold was shipped, the whole deficit being covered by repatriation of Canadian sterling debts and the accumulation of sterling balances. This procedure was facilitated by an agreement made in April 1941 between Canada-which did not accept lend-lease for itselfand the U.S., whereby Canada's U.S. purchases of component parts for use in carrying out British contracts in Canada would be supplied under the Lend-Lease act on United Kingdom account.

The financing of Great Britain's war expenditure in Canada was as follows (in Can. \$ million):

		4 years				
Financial Years	1940	1941	1942	1943	1944	1940-1943
Repatriation of						
securities	79	181	365	72		697
Accumulation of						
sterling balances	16	190	687			
Loan to British						
government				700		700
Gift to British						
government				1,000	1,000	

In 1943 the Canadian government appropriated Can. \$1,000,000,000 for mutual aid to cover deliveries of war material to Great Britain and other members of the United Nations. Canada's total aid to the United Nations during the war was estimated at \$4,500,000,000; \$1,700,000,000 as mutual aid (including \$1,442,000,000 to Great Britain); \$700,000,000 noninterest-bearing loan to Great Britain in 1942; \$1,000,000,000 as an outright gift to Great Britain in 1943 and 1944, \$800,000,000 repatriation of British-owned Canadian securities; and the refunding of

British expenditure in munition plants in Canada to the extent of \$200,000,000. One-third of the total assistance was in the form of loans and repatriations, while two-thirds were outright contributions.

Tentative estimates by the Foreign Exchange Control board placed foreign investment in Canada at the end of 1945 at \$6,700,000,000, against \$6,900,000,000 in 1939. While Great Britain's investment dropped by \$958,000,000 to \$1,500,000,000, U.S. investment rose \$735,000,000 to \$4,900,000,000.

At the end of the war the technical position of the Canadian currency was good. Canada was able to grant substantial assistance to Great Britain and to reduce its foreign indebtedness toward Great Britain. Its expanded production placed Canada in the position of a potential creditor nation.

Latin America.—The currency situation of some of the Latin-American countries was not very stable before the outbreak of World War II. The first year of the war greatly disturbed the trade of Latin-American countries with Europe, causing further difficulties to their monetary conditions. This situation, however, soon improved. Great Britain increased its purchases in these countries; of decisive importance, however, were the steadily mounting purchases of many strategic commodities by the U.S. When the U.S. became involved in the war, the majority of Latin-American countries mobilized their economic resources and supplied the U.S. with a large amount of raw materials and with foodstuffs. Latin America achieved a substantial export surplus in its cash trade with the U.S., which for the four years 1941–44 amounted to \$1,612,000,000.

The gold and dollar reserves of the Latin-American countries increased substantially, as follows (in millions of dollars):

	Dec. 1939	Dec. 1944	Aug. 194	45
Argentina	431		1,111	
Brazil	40	•	352	
Chile	30		82	
Colombia	21		104	
Cuba	1		176	
Mexico	32		² 55 28	
Peru	20			
Uruguay	68		189	
Venezuela	52		186	
	-			
Total	695		2,483	(Increase 1,788)

Such development, of course, strengthened the technical position of the currencies concerned. Unfortunately, the great export surplus was accompanied by a substantial increase of domestic purchasing power which initiated an inflationary rise of prices in a number of countries.

In spite of the strongly improved balance of payments, exchange restrictions were maintained in most of Latin America. Only Mexico, Cuba, Costa Rica, Guatemala, Haiti, Panama and, until 1945, Peru, remained without exchange control. Although exchange restrictions were liberalized in most countries, the practice of multiple exchange rates was retained in some of them.

As a whole, the monetary position of Latin America was stronger at the end of the war than in 1939. The countries held largely increased gold reserves in addition to also increased dollar and sterling balances. Some of them, as Argentina and Brazil, repatriated securities owned by Great Britain.

The development of the exchange rates is indicated by Table IV, which shows that a relatively greater stability

	1939	>	Average					Aug.
Country Unit	Time I	Dec.	1940	1941	1942	1943	1944	1945
Argentina official	 31.22 2	9.77	29.77	29.77	29.77	29.77	29.77	29.77
Per special export	 23.15 2	2.78	23.7	23.709	23.70	24.73	25.125	25.125+
Brazil Cruzeiro* official		6.06	6.05 5.02	6.05 5.07	6.05 5.14	6.05 5.13	6.05 5.14	6.06 5.18*
free		5.03 2.76	2,50	2.25	2.15	2.30 2.20	2.28 1.90	2.28 — 1.92 —
Chile Peso A Export		5.17 4.0	5.166 4.00	5.166 4.00	5.16 4.00	5.16 4.00	5.16 4.00	5.16 4.00
Colombia Peso oro		7.02	57.08	57.004	57.05	57.265	57.272	56.98
Cuba Peso		8. 8.1 <i>9</i>	90.5 18.54	96. 20.53	1. 20.56	1. 20.57	1. 20.58	1. 20.58
Uruguay Peso controlled noncontrolled		5.83 6.46	65.83 37.60	65.83 43.38	68.83 52.72	65.83 52.85	65.85 53.5	65.83 55.4 +
Peru Sol	 17.69 1	7.52 0.	15.90	15.70 40.	15.38	15.38	15.38	18.38 -
Venezuela Bolivar		1.25	26.30	26.50	29.85	29.85	29.85	29.85

*Prior to Nov. 1, 1942, the official designation of the Brazilian currency was milreis.

prevailed in the exchange rate of the Latin-American countries during the war years than in the period preceding them.

As a result of the improved balance of payments position, Argentina in July 1941 abolished its exchange control office and also the permit system for a number of commodities, usually comprising about 80% of its imports. At the end of 1940 a triangular payments agreement was arranged between Argentina, Paraguay and Great Britain, which made it possible for Paraguay to obtain Argentine pesos in return for sterling balances. In March 1942 an agreement had been reached with Great Britain to invest the excess sterling in repatriating Argentine bonds in Great Britain, chiefly the Conversion Bond Issue of 1934, the "créditos" and "cedulas" and some railway bonds aggregating together $f_{4,100,000}$. In view of a strong capital influx from the U.S., it was required in 1942 to register all foreign securities and to deposit dollar notes with the central bank. The free market rate of dollar exchange had been fairly stable at a level three per cent above that of 1940. The "bid" rate on foreign currencies at a substantially higher level than the free market rate was applied only to luxury goods. The agreements with the U.S. treasury department regarding \$50,000,000 and \$60,-000,000 loans remained unratified, owing to the improvement of the balance of payments.

In April 1943 the buying rate applicable to exports other than those classified as "regular" was reduced from pesos 421.82 to 390.02, corresponding to a decline in the free market rate from pesos 424.75 to 398. The free peso rate in April 1943 was the highest in the four-year period. In the same month the ministry of finance was authorized to control all foreign capital movements, and the inflow of floating funds seeking temporary refuge was prohibited. Productive capital for real long-term investments was granted entrance. A special decree provided for the repatriation of about £33 million of sterling obligations.

The exchange control was administered in a very liberal way. A special concession, made to British investors in 1944, reduced the special rate for financial remittances to Great Britain from 16.15 pesos to 14.15 pesos to £1.

Higher coffee prices under the Inter-American Coffee Agreement were responsible for easing the Brazilian exchange situation in 1941. Further helpful factors were the credits from the U.S. Export-Import bank and the inflow of refugee funds. In 1942 the milreis was supplanted by a new currency unit, the cruzeiro. The free rate of the dollar improved. The mounting accumulation of dollar and sterling balances provided the basis for a compensation agreement with Great Britain with respect to blocked cruzeiro balances. Under a new agreement

of Nov. 1943 it was possible to grant more favourable terms to creditors than previously. In Sept. 1943 the special free rate for dollars was reduced to 20.30 cruzeiros. The buying price of gold was reduced in 1944, and the rates for dollar and other currencies adjusted downward (20 cruzeiros to \$1), to emphasize the strength of the cruzeiro. The demand for foreign exchange increased, however, because of the settlement with the foreign

holders of Brazilian bonds. The exchange control included examination of essentiality of imports from all countries.

As early as 1940 the position of the Mexican peso had been strengthened by a heavy influx of capital which enabled the country to abstain from the introduction of exchange control. The peso was pegged to the U.S. dollar in the autumn of 1940 at the rate of pesos 4.85. In Nov. 1941 an agreement was concluded with the U.S., providing for the stabilization of the Mexican peso, for purchases of Mexican silver by the U.S. and for extensive Mexican road building with the financial assistance of the U.S. In 1943 a new \$40,000,000 defense loan was launched to finance the acquisition of exchange from the central bank for the redemption of foreign obligations. In April 1944 exports and imports of gold were prohibited, except by authority and through the Bank of Mexico.

In Bolivia, after a decline in exchange value in the spring of 1940, the currency was attached to the dollar at a rate Bs. 40=\$1 for necessary imports and at a compensation rate Bs. 55 for other imports. In June 1941 a single exchange rate of Bs. 46 to \$1 was established. Sufficient dollar exchange was available to meet all demands. In Feb. 1943 the official exchange rate was lowered to Bs. 42. Foreign exchange reserves increased because of greater export of tin and a loan from the Export-Import bank. But in 1944 the exchange rate in the curb market declined and in Aug. 1945 reached Bs. 60 per U.S. dollar against an average of 51.80 in 1944. The percentage of exchange to be delivered by tin exporters was increased in 1945 from 42% to 60% for exporters of highest grade ores. Percentages for exporters of other goods were also raised.

In Chile the official rate of the U.S. dollar remained unchanged in 1940. In November of that year an Anglo-Chilean payments agreement was concluded concerning all commercial and financial settlements between the two countries. In 1942 the powers of the Exchange Control commission were transferred to the central bank. The increasing exports to the U.S. in the following years created the problem of immobilizing the excess purchasing power. The central bank sold to the public dollar certificates of deposit represented by dollars purchased from the copper producing companies, with whom a special agreement with regard to the amount and rate of their dollars obtained from export was concluded. The National Foreign Trade council pursued a policy of preventing foreign exchange from being spent on nonessential imports. Attempts to induce importers to invest surplus pesos in dollar deposits at the central bank were not successful.

Exchange control was reinforced in Colombia in 1940. Imports were divided for exchange control purposes into four classes, with progressively less favourable rates. A

decline in imports resulted in making exchange available for all classes in the spring of 1942. To stabilize the prevailing exchange rate and to curb inflation, the central bank was empowered in June 1943 to sell nonnegotiable certificates of deposit bearing a two year maturity and an optional backing of gold or dollars. During the same years the rates applicable to import payments were lowered, and a special licence was needed for any new imports. The exchange control regime became very liberal.

In Venezuela, a strict control was imposed in 1940 on imports and foreign exchanges. After a credit was obtained from the National City bank of New York, the exchange quotas for imports were allowed to increase about 50%. A system of multiple rates was established. Thus, dollars originating from oil exports were bought by the authorities at Bs. 3.09, from other exports at Bs. 4.60, from coal and cattle shipments at Bs. 4.30. Exchange obtained from uncontrolled exports and other sources could be negotiated on the free market when the rate was strengthened in 1942. After 1942 the rate of 3.35 to \$1 was maintained in the exchange market, but the system of multiple exchange rates continued until 1945.

In Ecuador, exchange control was re-established in June 1940. In Dec. 1940 the dollar rate was fixed at 15 sucres and in June 1942 was lowered to sucres 14-\$1 in conjunction with a stabilization loan from the U.S. In Sept. 1943 the dollar buying rate was lowered to 13.50 sucres, and toward the end of 1944 to 13.40.

In Uruguay, the plentiful supply of dollar exchange in 1941 was reflected in the drop of the free rate to the lowest level in many years; that is, the official selling rate of peso 1.90. But unlike most other Latin-American countries, Uruguay evidenced a shortage of foreign exchange supply early in 1943. In the autumn of 1943 some "scarce" capital flowed into Uruguay from Argentina, thus easing the situation.

In Paraguay, the buying and selling rates for foreign currencies were held constant. The policy of limiting the amount of exchange available for the imports of luxury goods continued, exchange for these items ranging as high as 50% above the official rates. Thanks to the improvement of the exchange position, Paraguay was able to resume a partial service of its foreign debts in 1940.

The natural consequence of the Latin-American development during the war—increased export to the U.S., Canada and Great Britain, the impossibility of raising imports, and the various loans and investments by the U.S.—was the improvement of the balance of payments and of the foreign exchange position of most of the Latin-American nations.

The Far East.—The outbreak of the war with Japan in 1937 found China engaged in a long-term policy of stabilization. The monetary position was relatively strong as a result of the currency reform of Nov. 1935, which had introduced a sole legal tender currency in the form of notes issued by the four government banks. All silver coins had been withdrawn, and the sale of silver by the national government of China to the U.S. treasury had provided the government banks with substantial foreign exchange balances which enabled them to stabilize the exchange market. The war interrupted this stabilization process in its beginning. During the period 1937-41 the government had recourse to note issue for about two-thirds of the total expenditures; by the end of 1941 the note circulation of the government banks increased more than ten times. Because of its structure, China's economy showed the effects of inflation late in the war.

At the beginning of the war in July 1937, the Central

bank of China undertook to support the value of the national yuan at \$0.29 and 15.2d. by exchange operations in the open market.

In March 1938 a system of rationing and control for sale of foreign currencies at official rates was introduced. But it was not possible for the Central bank of China to enforce the exchange control because of the autonomous status enjoyed by the foreign banks in the Shanghai and other major markets. A system of free and official exchange rates was established. In spite of the support from the Chinese and British banks, the national yuan depreciated to \$0.05 in the free market for the middle of 1941. By this time China had used up the dollar balances acquired through the sale of silver and nearly exhausted the various credit facilities obtained by the U.S., British and Russian governments. The British arranged for a loan of £10 million; the U.S. loan amounted up to \$100,000,000.

On April 25, 1941, exchange agreements were signed between China, on the one hand, and the U.S. and Great Britain on the other. The agreement provided for the establishment by China of a stabilization fund, which was to be managed by a stabilization board set up by the Chinese government. This stabilization board began operations in Aug. 1941. The dollar rate was fixed 5510 cts. to the yuan. A system of licensing each individual transaction involving the expenditure of either U.S. dollars or sterling exchange was introduced. Fourteen licensed banks were authorized to provide dollar or sterling exchange at official rates for normal trade requirements.

A new situation arose at the end of 1941 and the beginning of 1942, when the advance of Japanese forces brought the activities of foreign banks and firms in the major markets to an end and cut all China's foreign trade relations.

The outbreak of war in the Pacific led to an increase of monetary assistance to the Chinese government. A \$500,-000,000 loan was granted by the U.S. stabilization fund and a credit of \$50,000,000 by the British government. In Feb. 1942 the Chungking government was able to abolish restrictions on money movements within the country and to free the export of currency, except for newly printed banknotes sent to ports of entry or interior, which required permission from the ministry of finance. The foreign exchange situation improved further because the U.S. supplied China with lend-lease, thus saving her dollar exchange, and Allied military disbursements began to expand substantially. The national government of China was even able to accumulate dollar balances, which grew in magnitude with increasing U.S. war activities in China. The official rate of the Chinese dollar was reduced in July 1942 to five cents.

Inflation proceeded at greater speed in 1943. Prices and note circulation had risen tremendously, yet the official rate Ch. \$20=U.S. \$1 was maintained with a special rate of 30-1 for diplomatic, educational, missionary and some other transfers. In May 1943 unlicensed exports of gold and silver were prohibited. To bolster the falling currency, \$200,000,000 in gold bullion was purchased from the U.S. with the part of the \$500,000,000 stabilization loan granted in 1942.

The monetary situation deteriorated further in 1944. The rapid rise of prices led to the abandonment of the official rate of \$0.05 as the basis for compensating the national government for currency and credits in national yuan made available to the U.S. army. Settlement of such advances was made subject to exchange rates and other conditions to be agreed upon from time to time between

the treasuries of the two countries.

In June 1944 the price of the U.S. dollar reached Ch. \$220. The index of wholesale prices of domestic commodities in the spring of 1945 reached a figure of more than 1,200 times the 1937 level and in August 1,900 times. The exchange shop buying rate for dollars went up to Ch. \$1,200. The currency in circulation reached approximately a level between 500,000,000,000 and 600,000,000,000 of national yuan by the end of the war.

The end of the war aggravated rather than eased monetary chaos in China. The movement of military forces and population increased the demand for currency and the whole situation was one of a runaway inflation.

Japan and the Yen Bloc.—The opening of hostilities in China in 1937 found Japan already committed to a war economy, the financial aspects of which were a controlled depreciation of the exchange rate and a managed use of central bank credit. During the China War and the early period of the Pacific War, the Japanese government financed itself through the issue of long-term loans which, to a large extent, found their way into the market. In the latter part of the Pacific War, a floating debt and contingent liabilities were growing faster than the capacity of the market to absorb new bond issues. The government even had to require banks and other financial institutions to invest fixed quotas of their expanding volume of deposits in government bonds. Compulsory investment of certain corporate funds in government bonds was also introduced.

The main feature of the Japanese occupation of China was the dismemberment of China into separate administrative zones, each having its own financial organization and currency, distinguished mainly by the degree of integration with the economic, monetary and financial system of Japan. In 1937, the Bank of Mongolia was organized as the note-issue institution for Inner Mongolia. In 1938 the Federal Reserve bank of China in Peiping was created as the note issue institution for northern China. In 1941 the national government of China in Nanking organized the Central Reserve bank of China as the note institution of central and southern China. In fixing the official value of currencies of the yen bloc, Japanese authorities were guided by political considerations. A system of strict exchange control was maintained not only between occupied China and the Japanese empire but also between zones in occupied China; in addition, the system of trade barriers was erected. The currencies of occupied China were legally treated as foreign currencies in the empire. The Japanese-dominated banks of issue in occupied China had to provide notes, especially for the currency needs of the Japanese army and had to finance the budgetary deficits of the local government. Lack of statistical information made it impossible to determine the economic and financial exploitation of occupied China by Japan. Japanese authorities imposed levies of contribution upon the Japanese-dominated governments, issued military notes, and acquired local currency from the central banks mentioned before. Military yens were withdrawn as soon as the currencies issued by the newly created central banks were accepted by the population. The central banks were compensated by the Japanese government with yen credits on the books of the Bank of Japan in amounts equal to those of military yen withdrawn.

The Japanese yen was pegged in Oct. 1939 to the U.S. dollar at a rate of Yen 100=\$23.44, which represented a depreciation of 14%, or to the same extent as the official sterling rate. To stabilize the yen-sterling exchange, all

forward exchange transactions in sterling and sterling-area currencies had to be centralized beginning with June 1, 1941, in a collective account maintained by the Yokohama Specie bank. On July 1, 1941, this foreign exchange concentration system was extended to include operations in the U.S. dollar and currencies of 11 other nonsterling countries. This measure centralized the whole body of foreign exchange transactions between the yen group and other currencies. Any losses resulting from transactions over this account were covered by a government guarantee of yen 500 million, any profits arising being credited to the governments.

In retaliation for the Allied freezing of Japanese assets abroad, Japan announced a freezing ordinance on July 26, 1941. Under it the assets of U.S. and British nationals were immediately frozen. The exchange control system had already been tightened prior to this measure in order to provide exchange for imports from non-yen countries. In Feb. 1941 the government was given authority to order Japanese nationals to sell their foreign assets.

On Dec. 29, 1941, Japanese exchange control was simplified, and the independence of the yen from the U.S. and British currencies was established. Exchange rates were to be fixed autonomously by the ministry of finance on the basis of the yen currency. No essential alteration, however, was made in the range of the existing exchange rates. For the reichsmark a rate of RM. 170.50=Yen 100 and for the Swiss franc a rate of Sw. fr. 98.90=Yen 100 was fixed. This corresponded to Yen 100=\$23.40 and Yen 1=15.2d.

Settlements with countries outside the yen area were no longer to be made by payments in dollars and sterlings. Payments were more and more effected through clearings and transfer of yen balances. Gold kept its importance as an instrument for maintaining the credit of the yen currency in the "co-prosperity sphere."

Throughout its field of conquest, Japan replaced the provincial or colonial currencies with the military yen (called "gumpyo" in Japanese) at rates established by Tokyo. The military yen was first issued in China in various denominations expressed in yen. In other areas the gumpyo was issued in the currency of the occupied country,—in the Philippines a military peso, in the Dutch East Indies a military guilder. In these cases the gumpyo was at par with the local currency but varied in relation to the Japanese yen. In the Philippines \$1=2 yen, in Thailand the baht was defined as 1 baht=1,551 yen. In April 1942 this ratio was changed to 1 yen. In Indo-China, piastros 100 were 97.60 yen.

In April 1942 it was ordered that all currencies circulating in the Philippines as well as in the Dutch East Indies be replaced by notes issued by banks and similar institutions.

In Hong Kong the value of silver dollars was fixed in relation 2-1 to the military yen. The Shanghai dollar had been severed from its dollar and sterling links in Jan. 1942.

In the territory dominated by the puppet Nanking government, the Chungking yuan was finally displaced by Japanese authorities. In 1941 the rates had been set at 1 Chungking yuan=1 Nanking yuan=1/4 of 1 Japanese military yen. In March 1942 a rate of 100 Chungking yuan=77 Nanking yuan was proclaimed, and in May 1942 a rate of 2 Ch. yuan=1 Nanking yuan was fixed. Soon afterward the Chungking yuan was prohibited,

Since the beginning of 1942 Japan had endeavoured to organize a yen area comprising the whole far east. The main instrument of this policy was the military currency, the gumpyo. After a short time, this currency was put on a par with the Japanese yen, which involved an in-

direct attachment of all local currencies to the yen at a rate of 1: 1. This de facto introduction of a new parity with the yen amounted to a depreciation of the local currencies. The rupee in Burma was depreciated 22%; the baht in Thailand, 37%; the Straits dollar in British Malaya, Borneo and Sarawak, 50%; the peso in the Philippines, 53% and the guilder in the Dutch East Indies, 56%.

These rates were settled to give a high purchasing power to the Japanese yen. In China proper the military yen, the Nanking and Peiping yuan were also attached to the Japanese yen. A kind of monetary warfare was conducted between these currencies and the Chinese yuan. The Central bank of Nanking received support from the Japanese government in several ways.

The network of fixed exchange rates between the different parts of the yen bloc had been completed in 1943. The rates did not, however, correspond to the relative purchasing power of the different currencies. Various arrangements for price equalization were introduced. The foreign exchange business previously carried out by the Yokohama Specie bank was transferred to the Bank of Japan. The currencies of the conquered countries were relatively more depreciated than were the currencies of the German sphere. Conversion of these satellite currencies into Japanese yen was permitted only in exceptional cases to limited amounts, a rule also applied to gumpyo circulating in these areas.

The price development in 1943 and 1944 increased the disparities between the intrinsic values of different currencies so that the existing exchange rates became more and more fictitious. But with trade put on a barter basis, the difficulties arising from the unequal increases in prices of the different countries were somewhat overcome. Between Japan and Nanking China the policy of applying different rates to different categories of transactions was introduced in 1942, but abolished as too complicated in the spring of 1943. A uniform rate of yen 18-yuan 100 was fixed, and trade became a monopoly of the Barter Trading corporation. A similar system was used to trade with other areas under Japanese domination. Steps were also taken to give the Nanking yuan a greater recognition as an "international currency." The use of military yuan was suppressed in the area of the Nanking yuan.

The strain upon the Japanese financial situation was evident from the figures of operations of the Bank of Japan. By the end of the war, the bank's issue of notes reached 28,460,000,000 yen against 2,600,000,000 in 1941. The outstanding government bonds were reported at about 120,ooo,ooo,ooo yen, a floating debt at 40,000,000,000 yen and contingent liabilities of about \$60,000,000,000. At the beginning of the China War in 1937, the long-term government debt was less than 10,000,000,000 yen, the floating debt 500,000,000 yen. Yet despite the inflationary expansion of credit and currency, the Japanese government was apparently able to control prices and check the inflationary trend up to the end of the war. The Tokyo retail prices stood in Nov. 1944 at 202 (July 1937-100). A system of rigid controls prevented potential inflation from having its full effect on the marketing of goods.

No figures were available at the end of 1946 concerning the contribution which Japan extracted from the "coprosperity sphere" for its war needs. The three principal procedures to obtain the necessary means for purchasing goods and meeting military requirements were the levy of contribution upon the Japano-dominated governments, the issuance of military notes, and the acquisition of local currency from the Japanese dominated banks of issue. (Compared with figures of circulation at the end of 1941,

the note issue of the Central Reserve bank of China increased up to Aug. 1945 by 150,000%, of the Federal Reserve bank of China by 3,000% and of the Bank of Monchou by 530%.)

Occupied China achieved an export surplus with Japan and accumulated short-term balances yen in Tokyo, which were believed to exceed the original value of the Japanese long-term investments made in China before and during the war.

India and the Middle East.-In India and throughout the middle east, the greater part of which belonged to the sterling bloc, sterling assets had already begun to accumulate in 1940. Allied war expenditures in this part of the world were increasing first as a result of the campaigns in Africa, then of the war against Japan. In some countries they were connected with the shipping of lend-lease supplies to the soviet union. The sterling balances were used for the repayment and repatriation of debts in Great Britain; a great part of these balances was purchased by the central banks. The increase of the sterling assets resulted in an expansion of the note circulation. The spending power increased, yet at the same time the supply of goods was lacking as the domestic production, although expanded, was inadequate and the imports fell below the prewar level. Under these conditions inflationary pressure arose in all countries concerned, with prices steadily mounting. The undeveloped credit and financial organization could not be used properly to check this pressure.

A Middle East Financial conference, attended by experts representing the middle east governments as well as by representatives of India and the British and U.S. treasuries, met in Cairo, Egypt, in April 1944. A number of resolutions were drawn up outlining the steps which should be taken to prevent the spread of inflation. The conference emphasized that all currencies in the middle east were backed fully by gold or foreign exchange assets.

In India, where the note circulation rose from rupees 2,000,000,000 in 1939 to nearly 9,000,000,000 by the beginning of 1944, Indian peasants were not able to buy manufactured articles or to obtain gold or silver in exchange for their products and, therefore, were not inclined to market their produce. The Indian government decided on the recommendation of a specially appointed committee to release gold on the Bombay market. The Indian Reserve bank was prepared to sell 35,000 oz. or 100,000 tolas daily. The sale of gold was expected to act as a check on inflation; the peasants would sell more of their products, the gold sales would absorb monetary purchasing power from the market, and the sales would help hold down the price of gold quoted in the open market. The gold price in India had begun to rise even at the end of 1941, attaining a maximum of more than double the parity price of the rupee (Rs. 80/12 per total-about £16 per oz.) in May 1943. The sales of gold did not affect the reserves of the Indian Reserve bank; gold from South Africa was sold under arrangement with the British government. Later, under arrangement with the U.S. government, gold was shipped from the U.S.

The price of gold went down to 71–72 rupees in June 1943, and with the Allied military victories fell to Rs. 62/8 in Nov. 1944, the lowest point. At the end of Dec. 1944 the price was again Rs. 74/12; in March 1945, Rs. 74/8. After the end of the Japanese War, the price dropped to Rs. 63/4, but recovered quickly and reached Rs. 8/14 in Dec. 1945.

In April 1945 the U.S. treasury terminated its participa-

tion in the program of selling gold in India, Egypt and Iran. The military need for currencies of these countries had been met completely by that time.

Silver was also sold on official account in India, the daily offering being raised from 100 to 200 bans in the autumn of 1944. The highest price for 100 tolas was Rs. 140. In the summer of 1944 India received 100,000,000 oz. as lendlease from the U.S., to be used exclusively for coinage.

In Iran the increase in the holdings of sterling resulting from the expenditures of the British forces induced the authorities to lower the exchange rate from rials 174 to 140= £1 and from rials 45 to 35=\$1 in Sept. 1941. The increased import of gold into Iran made it possible to replace the Persian crown jewels with gold as backing of the note circulation; the amount involved equalled £2,000,000. Yet in spite of the influx of gold, restrictions were placed on the sale of dollar exchange—other exchange remaining free—effective June 1, 1944. The sales were chiefly limited to bona fide commercial transactions for imports from the U.S. The sale of dollars at the official rate was virtually suspended in June 1945, and the free market rate soon reached 65 rials to \$1.

Gold was also sold in Egypt where the note circulation reached £E. 96 million at the end of 1943 as against £E. 26,000,000 in 1939. For some time the price of gold in Cairo followed the price movements in Bombay rather closely. At the beginning of 1944 the gold price at Alexandria reached nearly £16 per oz. The Egyptian government changed its policy in June 1944, suspending the official gold sales.

The open market price for gold in Alexandria slumped violently when Germany collapsed. This decline carried the price down from 184 piastros per dirkem at the end of April 1945 to 162 piastros on May 10. Yet in Aug. 1945 the price reached 193 piastros (£19 s.10). These gold transactions were, of course, more spectacular than large, and the premia quoted in gold compared with exchange parities were no true indices of the value of the middle east currencies.

The attempt to check inflation by sales of gold did not succeed, though it might have had some local and temporary results. Although the amount of gold sold to the public in different countries was not known, it was probably rather small compared with the amount of the newly created spending power plus the degree of inflationary pressure existing at the time when the program of gold sales started.

Allied Military Currencies.—The military occupation of territories in North Africa in 1942–43 created new currency problems. The immediate currency needs of the U.S. and British forces in the liberated area were supplied by the issue of spearhead currencies, for which new, unified occupation money was substituted later. The spearhead currency of the U.S., first used in North Africa and during 1943 in the Italian theatre, was the yellow-seal dollar in denominations \$1, \$5 and \$10. The British authorities issued a special spearhead pound note. The conversion rate between these two currencies was \$4-£1.

In 1943 a new Allied military lira was jointly issued as legal tender and circulated at par with the local lire. The official rate of both liras was 100 lire=\$1, 400 lire=£1. The North African franc was valued in 1942 at 75 fr.=\$1 (300 fr.=£1) and was appreciated in Feb. 1943 to 50 fr.=\$1 (200 fr.=£1). The French Equatorial Africa franc and that of all Free French colonies maintained its value of 176.6 fr.=£1.

For the invasion of France in June 1944 the Allied military forces were provided with specially printed notes "francs tricolores." This currency was freely interchangeable for the franc currency of the Bank of France. By an agreement signed in Aug. 1944 between the French government and the U.S. and the British government, the French government took over responsibility for the "tricolor" military notes issued in France by the U.S. and British authorities.

In Belgium and Holland the notes required by the military authorities were provided by the government and were expressed in local currency. The rate of exchange was fixed for 176.5 Belg. fr.= \pounds 1 and 10.691 gulden= \pounds 1.

The actual currency taken into Germany by the Allied armies were the military authority notes printed in Britain. The Allied high command fixed rates of 10 marks to the dollar and 40 marks to the pound. After the surrender in May 1945 "Allied Military Mark Notes" were put into circulation in all occupied zones.

In countries where the soviet army was primarily responsible, rates of exchange in relation to the rouble were fixed. Those rates were as follows:

	1 Re	ouble	Percentage change		
Bulgaria	Leva	15	+ 1		
Rumania	Lei	100	 74		
Hungary	Pengo	2.50	62		
Poland '	Zloty	1.	0		
Czechoslovakia	Kč.	5.50	, — 1		
Austria	Sch.	2	50		

*Calculated against pre-war rates via the U.S. dollar \$1=roubles 5.30.

(From the 15th Annual Report of the Bank for International Settlements.)

Special Hawaiian series of U.S. currency, consisting of U.S. silver certificates and federal reserve notes with the overprint "Hawaii" and originally introduced in Hawaii in July 1942, were taken into central Pacific strongholds by the U.S. armed forces in Feb. 1944. These notes were destined for the use of the armed forces and of the inhabitants of these islands.

The rate of exchange established for liberated islands in the central Pacific was 20 Japanese military yen to one Hawaiian dollar, or 20% of the prewar yen value. In Japan the exchange rate of the Bank of Japan yen and sen notes, when used as currency by the Allied forces, was fixed in Sept. 1945 at yen 15=\$1 as compared with a prewar rate of yen 4.23 to the dollar.

* * *

At the end of World War II, the U.S. dollar remained stable in terms of its gold value and became a key currency for monetary reconstruction. The currencies of the members of the sterling area also maintained their stability. The monetary position of the neutral countries in Europe and of nearly all Latin-American countries improved. On the other hand, the currencies of the European nations occupied by the axis and of the far eastern countries occupied by Japan were mostly in disorder, and speedy action was required. China was in the midst of a run-away inflation.

The international capital movements during the war were represented by three big streams of capital. By far the largest were the lend-lease supplies of the U.S. In this category belonged also the Canadian mutual aid, an outright gift to Great Britain, and the British lend-lease to the soviet union and some of her allies.

A second group of international capital movements were the supplies and services to Great Britain by the members of the sterling area and some other countries. These sup-

plies led to accumulated sterling balances which surpassed the total of three thousand million pounds. Great Britain was faced with the task of working out the settlement of these balances.

Finally, Germany required huge contributions from most European countries amounting to more than 130,000,000,000,000 marks.

The war brought about a change in the creditor and debtor position of a number of countries. The greatest change occurred in the position of Great Britain.

Exchange control remained throughout the war as a common instrument used to help in maintaining the stability of the exchange rates. It is clear, however, that many of the rates as they existed at the end of the war would need some adjustment. They were out of line if the level of prices and wages was taken into account. Furthermore, it should not be forgotten that the end of the war found practically the whole world in a situation of open or potential inflation.

Postwar Developments

At the end of World War II orderly monetary conditions existed only in the western hemisphere, in most countries of the sterling bloc and in the European neutral countries. On the one remaining free great exchange market, in New York, only the exchanges of the Latin-American countries, Canada, the countries of the sterling bloc, Sweden, Switzerland, and irregularly the exchange of Spain and Portugal, were quoted.

With the liberation of the European countries and the defeat of Germany, an urgent task of monetary reconstruction arose in all nations which had been under German domination. The wartime controls, introduced by Germany, could be maintained only for a limited time and only in some countries; the danger that potential inflation would break into open inflation existed everywhere. The legacy of the nazi domination in the monetary field was certainly not small. In the countries which had been included in the Japanese co-prosperity sphere, immediate measures were also necessary to establish monetary order.

In the European countries, the task of monetary reconstruction was very difficult. The nations had to restore an orderly monetary system in an economy working mostly at low capacity while the accumulated purchasing power was everywhere great. The countries needed to replenish their stock of raw materials, renew the worn out industrial machinery, and repair the damaged transportation system. The demand for imports was enormous and that of foreign exchange considerable. The western European countries-Belgium, Holland, France and Norway-had been able to save a substantial part of their prewar gold reserve and dollar assets, but little of their foreign exchange reserve remained to Poland, Czechoslovakia, Yugoslavia and Greece. The monetary problems of the defeated satellite nations-Austria, Hungary, Rumania and Bulgaria -likewise had to be settled. In all countries the need of foreign assistance was great; even France and Holland required foreign loans in spite of their substantial foreign assets.

The changes in currency rates which took place during the war are illustrated by Table V. After the end of the war the rates of some currencies were further devaluated.

Before the liberated countries were able to establish new rates of exchange, they had to clean house after the German occupation. It was necessary to call in the outstanding currency in exchange for a new issue. By the end of 1945 currency conversion had been completed in Austria, Belgium, Czechoslovakia, Denmark, France, Holland, Nor-

Table V.—Currency Rates—Percentage Change in Value 1939-1945

Percentage depreciation —

Percentage appreciation +

								•		5	10 abb. 00.0114	1		
							U.S. Dollar Rate							
Co	untrie	s			Units					Αι	ug. 24, 1939	July 31, 1945	Aug. 1939 to July 1945	
Great B	Britair	١.			£.						4/3/1/4d	4/11½d.	-14	
Greece					Dr						117.60	25.000 billion	n —99.99999	
Italy .					Lit	٠					19.	100	-81.	
German	ıy .				RM.						2.493	10	<i>−75</i> .	
Finland	٠				FM .						48.60	120.80	-60.	
Iran					Rials						1 <i>7.</i> 41	32.01	-46.	
Belgium					B. Fr.						29.581/8	43.83	$-32\frac{1}{2}$	
Holland					Fl						1.86	2.65	-30.	
France			٠		Fr. Fr.						3 <i>7.</i> 755	49.625	-24.	
Spain .					Pes.						9.05	10.95	1 <i>7</i> .	
Norway	٠	٠			N. Kr.						4.27	4.96	-14.	
Portuga	١		٠		Esc.						23.3645	24.814	6.	
Turkey					L.T.						1.2667	1.32	- 4.	
Sweden		۹,			S. Kr.						4.15	4.20	- 1.	
Denmar	k.				D. Kr.						4.791/2	4.79	+ 0.1	
Switzerl	and				Sw. Fr.						4.435	4.30	+ 3.	
Brazil .					Cruzei	ro					19.608	19.048	+ 3.	
Argentin	na .	•			Peso						4.325	4.025	+ 7.	
													_	

(From the 15th Annual Report of the Bank for International Settlements.)

way and Yugoslavia. All outstanding currency, except small denominations, was called in and replaced by a new issue. The conversion ratio was mostly one for one.

In a number of countries the conversion was coupled with measures taken to block excess purchasing power. In view of the unsettled domestic economic situation and very unstable international economic relations, the task of fixing new exchange rates was very difficult. A very rigid price and wage control, rationing, limitations of public spending and a strict exchange control—all these measures were required in order to check inflation, but even they could not help without a speedy revival of production. Generally speaking, the danger of inflation was checked more efficiently in western than in eastern Europe.

As early as Nov. 1944 Belgium had taken measures to check inflation by withdrawing from circulation a substantial part of notes and by blocking at the same time 90% of all deposit accounts. In an agreement with Great Britain signed in Oct. 1944, a rate of 176.5 Belg. fr. to the pound was fixed, corresponding to the rate of 43.827 Belg. fr. to the dollar. The rate of the Dutch florin in relation to the pound was provisionally fixed in Sept. 1944 at Fr. 10.691-£1, and was then confirmed in the Anglo-Dutch payment agreement of Sept. 1945. In Holland, too, the total note circulation was reduced to about one-half and bank balances were blocked. France introduced a new rate of 119 francs instead of 50 francs to the dollar on Dec. 23, 1945.

In Denmark a rate of £1=D. Kr. 19.36 and \$1=D. Kr. 4.81 was fixed in Aug. 1945. The rate of the Norwegian crown was fixed in May 1945 to £1=N. Kr. 20, and \$1=N. Kr. 4.96. In Finland the rate of exchange was devaluated several times in 1945 and fixed in Oct. 1945 to FM. 547=£1 or FM. 136=\$1.

In Czechoslovakia a new currency had to be introduced to replace the protectorate and the Slovak koruna, the German mark and the Hungarian pengö. This was done in Oct. 1945; at the same time the amount of notes in circulation was greatly reduced and all deposits were blocked. The rate of the Czechoslovak currency was fixed at $£1 = K\tilde{c}$ 201.50 and at $$1 = K\tilde{c}$ 50.

In Yugoslavia seven different currencies were circulating at the time of liberation. They were exchanged for a new unit in Sept. 1945, the D.F.Y. dinar at the following rates: 5 D.F.Y.—100 Serbian dinars; 2.50 D.F.Y.—100 Croatian Kunas; 10 D.F.Y.—100 Bulgarian levas; 2.50 D.F.Y.—100 Albanian francs; 50 D.F.Y.—100 Italian lire; 100 D.F.Y.—100 Hungarian pengö. In Poland, the rate of zloty 100—\$1 was established.

Greece went through a galloping inflation. An attempt to stabilize the Greek currency was made in Oct. 1944 when one new drachma was issued for every 50,000,000,000 old notes and the rate was fixed £1 = 600 new drachmas. In June 1945 a new rate of Dr. 2,000 = £1 was established. But even this rate could not be maintained; the British gold sovereign was bought at 28,000 drachmas. In Jan. 1946 an agreement was concluded in London setting up a stabilization fund with £25,000,000 in sterling assets. The unsettled economic and political situation made currency stabilization temporarily impossible.

Hungary also experienced an acute inflation which surpassed by far even the German inflation of 1923. The pengö currency was practically repudiated and a new unit, the florint, was introduced in Aug. 1946 at 11.5 florint to \$1.

In the far east a very unsettled monetary situation was left as the aftermath of the Japanese occupation. In Shanghai, the Philippines, Burma and Malaya, the notes issued by the Japanese monetary authorities were demonetized. The dollar of the Straits Settlements was issued again, the rate being determined at the prewar parity of $1=f_1$, 8s., od. In Hong Kong the prewar dollar currency was restored; in Burma the prewar rupee; in the Philippines the peso, and in the Dutch East Indies the guilder. The exchange rate of the guilder was fixed in the Anglo-Dutch monetary agreement at the old rate fl. $7.60=f_1$, while the rate of the Dutch gulden was determined at Fl. $10.691=f_1$.

The end of the war increased rather than eased the monetary chaos in China. At the beginning of Aug. 1945 gold was quoted on the market at 180,000–190,000 Chinese dollars per tael, which caused the authorities in Chungking to raise the official price to \$175,000. The exchangeshop buying rate for dollars was at that time around Ch.N. \$1,400. The wholesale prices at the end of July 1945 were 1,900 times as high as in 1936.

The pressing problem was to reintroduce the national yuan in former Japanese occupied territories. In fixing the rates of conversion, the national government undervalued the Japanese-dominated currencies in relation to the national yuan, because the inflation in other zones, with the exception of central China, had not reached the degree of the inflation in Free China.

Regulations were issued in Shanghai for a limited conversion of central reserve currency up to 100,000 central reserve yuan daily, into national yuan, the rate being 200 central reserve yuan to 1 national yuan. In Nov. 1945 a program was announced for the conversion of federal reserve currency into national yuan, to be carried out between Jan. 4 and April 13, 1946, at which date federal reserve notes would cease to be valid. In northern China the local currency was maintained in circulation at the rate of 5 federal reserve yuan to 1 national yuan. Special yuan scups were temporarily issued for Formosa and Manchuria, and their rate was fixed at 1:1 between the special yuan scup and the Manchurian as well as the Formosan yuan.

In Shanghai a special exchange rate of 500 national yuan to the dollar for overseas remittances to China was introduced, which was used also for exchange transactions of the U.S. forces and civilian agencies. It represented a great undervaluation of the U.S. dollar in view of steadily mounting inflation. The U.S. dollar was widely used, especially for financial transactions, and this fact proved to be an obstacle to the reintroduction of a national currency.

A new attempt to stabilize the Chinese dollar was made in July 1946 with the rate of Ch.N. \$3,350-U.S. \$1. As in some of the European countries, the unsettled political and economic conditions in China made monetary reconstruction extremely difficult.

In Japan, the new rate of $\pounds 1$ to 15 yen was established; it represented a 67% depreciation of the yen from its 1937 value. The new exchange rate, considered by many as overvaluing the yen, acted as a deterrent to spending by the Allied forces.

The sterling bloc consisted at the end of the war of the whole British commonwealth—except Canada and Newfoundland—British mandated territories, British protectorates and protected states, Egypt, the Anglo-Egyptian Sudan, Iraq and the Faroe Islands. The organization formed for pooling of dollars and other hard currencies continued to work.

The pressure to convert part of the sterling balances into dollars, which was exercised by their holders, was steadily growing. An agreement with Egypt assured that country of \$40,000,000 for its needs in 1945 and 1946. Iraq obtained about \$4,000,000 for its purchases in 1945.

Exchange control in Great Britain was further simplified. The treasury's buying price of gold was increased in June 1945 from 168s. per fine oz. to 172s. 3d. per fine oz.

Great Britain arranged clearing and payment agreements with most European countries, which was helpful in promoting trade and proved also a stabilizing factor on the exchange markets. These agreements extended practically the working sphere of the sterling area. The first agreement was signed with Belgium in Oct. 1944 fixing the rate of the Belgian franc. Each government granted to the other overdraft facilities to the amount of £5,000,000, the balances over this amount to be settled in gold at a price to be determined in each case separately. In March 1945 the Anglo-Swedish monetary agreement was signed, the rate being fixed at 16.90 Kr. to the pound. The agreement envisaged a maximum accumulation of sterling of about £40,000,000 over a period of about two years. Sweden could use its sterling holdings to finance imports from all members of the sterling area.

An agreement with Denmark was signed in Aug. 1945 which followed closely the pattern of the Swedish agreement. The rate was fixed at Kr. 19.34 to the pound (only a fraction over the pre-invasion level). The Anglo-Norwegian monetary pact concluded in Nov. 1945 fixed its rate at Kr. 20 to the pound. The Anglo-Dutch agreement signed in Nov. 1945 fixed the rate at 10.691 guilder to the pound. It provided for mutual overdraft facilities of £5,000,000.

A financial agreement concluded with France in March 1945 arranged a payment organization in order to facilitate the resumption of trade relations between the sterling and franc areas. Great Britain was to open a credit of £100,000,000 to France and France a credit of Fr. 20,000,000,000 to Great Britain. By the end of Oct. 1945 the credit for French purchases in the sterling area was exhausted; French purchases stood to British purchases 10:1. France tightened up its exchange control and required that private holdings of foreign exchange be surrendered to the French authorities. Great Britain in its agreement with France promised to disclose to the French authorities private French accounts held in Great Britain. A new comprehensive British-French payment agreement was concluded in Sept. 1946.

A clearing agreement signed in Nov. 1945 with Czecho-slovakia fixed the rate at Kč. 201.5 to the pound and limited the overdraft facilities to £1,000,000 and Kč. 200,000.

ooo. Payment agreements were arranged by Great Britain also with Turkey (May 1945), Finland (Aug. 1945) and Switzerland.

Other countries in Europe also making bilateral payment agreement included: France with Belgium, Sweden, Switzerland and Argentina; Switzerland with Italy, Czechoslovakia and Turkey; and Sweden with Poland, Belgium and Norway.

These payment agreements and clearings became the first instrument helpful in rebuilding international trade, although in the beginning only in the way of bilateral arrangements. Because of the British position in international trade and of the stabilizing influence effected by the pound of sterling, the agreements arranged with Great Britain were the most important.

International Fund and Bank.—While many countries were engaged in the urgent task of rebuilding their currencies, plans were under way to organize an international monetary co-operation and to put it on a permanent basis. The Bretton Woods conference of the United Nations in July 1944 agreed to establish an International Monetary Fund and an international Bank for Reconstruction and Development (qq.v.). These organizations were constituted at Savannah, Ga., in March 1946. The soviet union did not become a member of the International Monetary fund, and the Bank for Reconstruction and Development, yet this fact was not expected to interfere with the functioning of the fund. The monetary system of the soviet union was different from that of the other nations; the rouble was not being used for international transactions.

The chief objective of the International Monetary Fund was "to promote international monetary co-operation through a permanent institution which provides the machinery for consultation and collaboration on international monetary problems" and to "promote exchange stability, to maintain orderly exchange arrangements among members, and to avoid competitive exchange depreciation." Detailed provisions of the agreement dealt with the changes in the exchange rate of the members. The changing of exchange rates ceased to be a sovereign right of each member alone, being now subject to conditions stipulated in the agreement.

While, in the postwar transition period, restrictions on payment and transfer for current international transactions were admitted, any member still retaining such restrictions five years after the fund began operations was required to consult the fund concerning their further retention.

The International Monetary fund represented an attempt to establish an international monetary organization, an international standard, which would be maintained by the permanent co-operation of all member nations. The par value of the currencies of the members was to be expressed in terms of gold as a common denominator or in terms of the U.S. dollar of the weight and fineness in effect on July 1, 1944.

The U.S. declared in Sept. 1946 that it would maintain the value 1 oz. fine gold=\$35; and Great Britain declared that it would maintain the ratio of the pound to dollar as it existed in Sept. 1946.

It was evident from the beginning, however, that Great Britain, her international financial position having been greatly weakened, would probably be able to adhere to the fund and its commitments only if she could obtain special assistance from the U.S. Therefore the Anglo-U.S. credit agreement, signed in Washington, D.C., on Dec. 6, 1945, and approved by congress in July 1946, had great significance for the future exchange and monetary policy

not of Great Britain alone. Great Britain received a line of credit of \$3,750,000,000, which might be drawn upon at any time until Dec. 31, 1951. In connection with this agreement, Great Britain took upon itself the obligation of abolishing the dollar pool arrangement of the sterling bloc not later than one year after the effective date of this credit arrangement. Each member of the sterling area was to have its current sterling and dollar receipts at its free disposal for current transactions everywhere, and any discrimination arising from the sterling area dollar pool was to be entirely removed. Moreover, after the effective date of this agreement, Great Britain was not to apply exchange control in such a manner as to restrict payments or transfers in respect to products of the U.S. permitted to be imported into Great Britain, or other current transactions between the two countries. Finally, the U.S. and Great Britain agreed that not later than one year after the effective date of this agreement they would impose no restrictions on payments and transfers for current obligations.

* *

The United States assisted in the first postwar year in improving the foreign exchange situation of several countries by loans granted by the Export-Import bank, to be used for purchases in the U.S. Such loans were given to France, the Netherlands, Belgium, Norway, Finland, Denmark and Poland. Another help consisted in the sale on credit of U.S. surplus abroad, which often represented goods very important for the economic rehabilitation of the European countries.

The frozen assets of the United Nations in the U.S. were being freed, and these amounts could be used for purchases in the U.S. or elsewhere. It should be noted that at the end of the war foreign countries held in the United States in the shape of earmarked gold, bank balances and dollar securities the total of about \$15,000,000,000—an increase of some \$9,000,000,000 since the end of 1938. In addition, the gold reserves of countries other than the U.S. increased during the war by some \$2,500,000,000.

The credits granted by the U.S. until Sept. 1946, the credit possibilities of the Bank of Reconstruction and Development and the potentialities inherent in the International Monetary Fund, promised to be of great assistance in achieving world monetary reconstruction.

At the end of 1946, however, exchange restrictions still existed in most countries and, though they were mostly necessary, they were delaying a revival of world trade. Furthermore, an inflationary tension existed throughout the world as an aftermath of the war. The price indices spoke an eloquent language, as can be seen from Table VI.

Table VI.—World Price Indices															
				Percentage chang in wholesale prices from Jan -June 1939 to June 1945							Pe	in Jai	Foreign exchange		
Argentina													+111	32.597	29.773
Australia						٠				٠			+ 40	389.55	321.41
Canada									٠				+ 41	99.419	90.597
Chile													+118	4.00	4.00
Czechoslovakia													- − 58	3.46	2,006
Denmark													∔ 94	21.825	20.877
France													244	2.8781	.8409
Mexico				:									-100	22.122	20.572
New Zealand .									-				- 50	392.35	322.70
Norway					-								+ 83	24.566	20.161
Portugal				Ĭ					:			:	+144	4.4267	4.0501
Spain	•	•	•	•		Ĭ		:	:			:	-109	5.60	9.132
Sweden	•	•	•	•	•	Ť	•	•	•	Ī		•	80	25.197	23.852
Switzerland	•	•	•	•	•	•	٠	•	•	•	•	•	+110	22.871	23.363
South Africa	٠	•	•	٠	•	•	•	•	•	•	•	•	+ 59	484.16	400.50
	•	•	٠	•	•	•	٠	•	٠	•	•	•	75	488.94	403.37
Great Britain .	٠	•	•	٠	•	٠	٠	•	•	•	٠	٠		400.74	403.37
United States .	٠	٠	٠	٠	٠	٠	٠	٠	٠	٠	٠	٠	+ 39		

(From the 15th Annual Report of the Bank for International Settlements.)

It is appropriate to compare the development of the price indices with the movement of the exchange rates as quoted in New York for buying rates for cable transfer.

It must further be considered that the prices went up in most countries in the first postwar year and that they continued this rising tendency.

Canada appreciated the rate of Canadian dollars on July 6, 1946, to a buying rate of Can. \$1=U.S. \$1 and a selling rate of Can. \$1.001/2. Similarly, the buying rate for the pound sterling was fixed at Can. \$4.02 and the selling rate at Can. \$4.04. The price development in Canada on the one side and in the U.S. and Great Britain on the other side were the determining factors of this move. Swedish currency was revalued on July 13, 1946, from 23.852 to 26.195 cents in the New York market.

Under a system of severe price control and rigid exchange control, and after seven years of abnormal international trade relations, it was difficult to determine the initial rates with a hope of finding the precise point so that correct exchange cross relations and appropriate relations to the price level and further price development might be achieved. Nevertheless, great progress was represented by the existence of plans and machinery to work toward an international currency integration and stability, and toward the achievement of an international order which would be better than that existing in the interwar period. (See also Gold; International Bank for Recon-STRUCTION AND DEVELOPMENT: INTERNATIONAL MONETARY Fund; International Trade; Lend-Lease; for exchange rates of individual countries, see statistical tables in separate articles dealing with those countries.)

Exchange Stabilization Funds.—Exchange stabilization funds, set up after the collapse of the international gold standard in the 1930s, were established for the purpose of preventing undesirable fluctuations in exchange rates and promoting exchange stability in general. The funds had assets separated from the foreign holdings of the central banks and used them to intervene on the exchange markets. Even before 1914, the Austro-Hungarian bank had pursued the policy of preventing undesirable fluctuations of the Austrian currency by an intervention on the open market. After World War I such policy was carried out by a number of central banks which operated under the gold exchange system.

Not all exchange stabilization funds had the same objectives in their intervention on the foreign exchange markets. The British Equalization account was established in the spring of 1932; at that time it obtained £150,000,000 of treasury bills, which it could sell in the London money market to acquire sterling funds. In 1933 this amount was increased to £350,000,000. A complete balance sheet of the account was not published, but it was reported that the fund operated at one time amounted to substantially over £500,000,000.

An early formulation of the aims of the British Exchange Equalization account was that "the account was designed, without resisting general trends, to iron out undue fluctuations in the exchanges caused by sudden movement of capital and speculation." It was also designed to combat seasonal exchange fluctuations. Yet in practice the most important objective of the British account as well as of the other funds was to help establish and defend the chosen levels of the exchange rates, which of course implied sometimes resistance even to general trends in the exchanges.

Before May 1933 the British account could influence the

movement of the sterling rate in terms of dollar and the gold bloc currencies. A proposal made during the World Economic conference in London in 1933 for co-operation between the exchange funds or for the creation of a tripartite exchange fund, operated jointly by the U.S., Great Britain and France, was not accepted.

The U.S. Exchange Stabilization fund was set up as a treasury agency in Jan. 1934. It received \$2,000,000,000 of the government's profit from the devaluation of the dollar for exchange stabilization operations. Originally created for a period of two years, it was continued later by presidential proclamation. The chief aim of the fund was to promote greater exchange stability. At that time the defense of the dollar was directed against competitive exchange depreciation; the fund was supposed to prevent the dollar from rising in value in terms of other currencies. There was clearly a fight between the U.S. and British fund at several instances.

The French fund, established in 1936, was designed to promote exchange stability. At the beginning its task was to confine the fluctuations of the franc in terms of gold currencies within certain prescribed limits. It meant, however, to resist trends also.

The Belgian, Swiss and Dutch Stabilization funds were all created in 1935 and 1936 to defend their respective currencies at newly chosen levels in terms of major currencies. The functions of these funds could have easily been carried out by the respective central banks. In Belgium and Switzerland the funds were absorbed by the central banks after only a short existence.

When the Tripartite agreement between the U.S., Great Britain and France was concluded in Sept. 1936, it was intended that the three stabilization funds should co-operate closely to promote currency stability on a broad basis. The unsettled position of the French franc made this principal objective difficult, although both the British and the U.S. Stabilization funds intervened repeatedly to strengthen the French franc by purchases on open market. The British and U.S. Stabilization funds co-operated, often pursuing the main objective in mutual agreement.

The British fund, operating chiefly in dollars and francs, continued also in 1938 its policy of resisting exchange movements resulting from such forces as short term capital, and mitigating but not preventing movements caused by underlying cost-price disequilibria. Thus, for instance, the fund used its resources to support sterling against the flight of capital during the Czechoslovak crisis in Sept. 1938. However, it was not inclined to intervene against the decline of the pound caused by an unfavourable balance of trade. The fund was ready to assume the risk of holding dollar balances.

The fund devised a technique of insulating the domestic credit structure from the effects of international monetary disturbances. When, for example, the fund acquired sterling in Sept. 1938 by selling dollars and gold, it invested its new sterling resources in treasury bills thus replenishing the cash position of the bank. The cash ratio declined from 10.49 in August to 10.31 in September. During 1937, the U.S. treasury prevented gold imports from entering the currency and credit base by sterilizing them into an inactive fund. In Feb. 1938 the treasury announced that it would sterilize only gold imports exceeding \$100,000,000 each quarter. In April 1938 the policy of sterilizing gold was discontinued, and the \$1,250,000,000 in the inactive account was deposited with the federal reserve banks to stimulate credit expansion. The treasury carried out operations similar to those of the British Equalization account.

During 1938 the U.S. Stabilization fund supported weak

currencies, especially the pound and the French franc, by purchasing them either on its own account and converting them at once into gold, or by acting as agent for the foreign exchange funds. In this case a settlement in dollars each night was requested.

During most of 1938 the exchange stabilization activities of the U.S. consisted in support granted by the fund to weak currencies. These operations accounted for a great part of gold imports during the Sept. 1938 crisis, the imports being shipments between the exchange funds of Europe and the U.S.

The Bank of Netherland on Sept. 27, 1938, stopped buying sterling in the presence of heavy offerings. Until that time the Netherland fund continued to operate in sterling, and the balances were usually settled by gold transfers with the British fund. The French franc, after its further devaluation in May 1938, was practically pegged to the pound by the exchange fund. The fund was not very effective in protecting the money market from the effects of capital movements.

The stabilization funds were faced with a heavy task in March 1939 following the occupation of Prague by Germany because approximately \$700,000,000 in gold moved to the U.S. The determined intervention of the stabilization funds helped, however, in maintaining most exchange rates stable.

On Jan. 6, 1939, the British Exchange Equalization account purchased from the Bank of England gold then worth £350. The account, thus strengthened, held the sterling at about \$4.68 until the end of August.

Improvement in the domestic political and economic situation in the spring of 1939 aided the French fund, which was able to transfer gold to the Bank of France chiefly as a result of the repatriation of capital.

A new exchange fund was set up in China in 1939; a sterling credit was used to provide support for the Shanghai dollar.

The relatively calm period from May to Aug. 1939 was used by exchange funds to build up their dollar resources to meet future difficulties. By the end of August, foreign central banks deposits in New York totalled about \$400,000,000, while more than \$1,100,000,000 in gold was earmarked for foreign accounts by the federal reserve banks.

The growing war danger stimulated a new flight of capital to the U.S. The need to support the sterling was steadily increasing. By Aug. 25, the account stopped supplying dollars and allowed the sterling to decline. On Sept. 6, the remaining gold of the Bank of England was transferred to the Exchange Stabilization account.

World War II obviously changed the operations of the stabilization funds. The pound sterling was pegged to the dollar by means of a comprehensive exchange control introduced throughout the sterling area. In the now enlarged dollar area, exchange stabilization operations consisted mainly in pegging or supporting foreign currencies by using dollar resources. Although the U.S. Stabilization fund had not supported foreign currencies during the Polish crisis, the treasury announced in September that the Tripartite agreement was still in force and that its principle of co-operation was still being observed. However, after the defeat of France in June 1940 and Great Britain's firm exchange control, little was left to implement this declaration.

Canada's Exchange Equalization fund took over in May 1940 all the gold and foreign exchange of the Bank of Canada at current market prices and received in addition \$325,000,000 from the sale of treasury notes and bills for working capital. Under the exchange control system, oper-

ations of the fund were not very significant. The Swiss Exchange Equalization fund of Sw.fr. 535,000,000 was liquidated on April 30, 1940. Its assets were divided between the federal government, the cantons, and the National bank.

Thus the U.S. Stabilization fund was the only one of the major stabilization funds which continued to operate during World War II. It supported mainly the Latin-American currencies and the Chinese currency.

In April 1941 parallel agreements were signed between China and the U.S. and between China and Great Britain, by which the Chinese-U.S. and the Chinese-British stabilization funds were established, aiming at the stabilization of the relationship between the Chinese yuan and the U.S. dollar and British pound. A five-man board (three Chinese, one U.S. and one British national) was appointed by the Chinese government to manage the funds. Great Britain agreed to provide £5,000,000; the agreement with the U.S. called for the purchase by the U.S. Stabilization fund of Chinese yuan to the amount of U.S. \$50,000,000, and Chinese government banks had to contribute U.S. \$20,000,000.

The U.S. entered into stabilization agreements with Mexico, Brazil and Argentina. The agreement with Mexico, signed on Nov. 19, 1941, provided for the use of \$40.000,000 of the U.S. Stabilization fund to stabilize the U.S. dollar-Mexican peso exchange rate. The U.S.-Brazilian agreement was signed on July 15, 1937; under it the U.S. Stabilization fund undertook to purchase Brazilian cruzeiros to an amount of \$100,000,000. The undertaking with Argentina, signed on Jan. 1, 1941, was not ratified by the Argentine congress. Under this arrangement, \$50,000,000 of the U.S. Stabilization fund was set aside to promote stability between the currencies of the two countries.

On Aug. 15, 1941, the U.S.S.R. received \$10,000,000 from the U.S. Stabilization fund against gold to be delivered within 90 days and on Oct. 10 an additional \$30,000,000 against gold to be delivered within 180 days. These were the first two instances in which the U.S. treasury purchased gold for future delivery.

The largest operation of the U.S. Stabilization fund in 1942 was the extension of a \$500,000,000 credit early in the year to the Chungking government to strengthen the Chinese yuan. The treasury granted smaller credits to support Latin-American currencies throughout 1942, as for example the \$5,000,000 loan to Ecuador announced on Feb. 5 and the \$5,000,000 agreement with Cuba, effective July 6, 1942.

The role of the U.S. Stabilization fund in controlling foreign exchange values was further diminished in 1943. However, several agreements with small nations for the purpose of stabilizing exchange rates were renewed. The agreement in which the U.S. undertook to sell gold to Cuba in maximum installments of \$5,000,000 was extended to June 30, 1945. On June 30 stabilization agreements with Ecuador and Iceland were renewed for one year, and the Mexican accord was extended for two years. The maximum sums which the U.S. was obliged to purchase were: \$5,000,000 in Ecuadorian sucres; \$2,000,000 in Icelandic krónur; \$40,000,000 in Mexican pesos. The bill of April 1943, extending the life of the stabilization fund, specifically forbade the transfer of gold holdings to any international stabilization fund without the consent of congress.

Under the circumstances of war, the role of the U.S. Stabilization fund in controlling foreign exchange values

declined in importance. In most Latin-American countries, surplus exchange holdings continued to grow and limited the need for a direct intervention to support the stability of currencies. Through the renewal of expiring stabilization agreements and through operations conducted under the existing agreements, the policy of co-operating with friendly foreign governments in the stabilization of their currencies was continued.

On Nov. 24, 1943, the U.S.-Brazilian stabilization agreement was amended to increase the amount of gold made available for sale to Brazil to \$300,000,000. The agreement of Sept. 26, 1942, between the U.S. and Liberia was allowed to lapse by mutual consent on June 30, 1944, the purpose of the operations under this agreement (to facilitate the conversion of the Liberian currency system from a British coin basis to a U.S. dollar basis) having been achieved. The British coins acquired by the U.S. Stabilization fund in accordance with this agreement were in process of being sold for dollars to the British government. During the fiscal year 1943-44, the stabilization fund reduced its holdings of Swiss francs by more than Sooo,ooo, at the same time increasing the holdings of currencies other than the Swiss franc-French francs, belgas and sterling-by \$2,400,000.

On Feb. 15, 1945, identical bills were introduced in the senate and the house of representatives, respectively, to provide for the participation of the U.S. in the International Monetary fund and the International Bank for Reconstruction and Development. The bill called "Bretton Woods Agreement act" was passed by the senate and the house of representatives. By this bill the secretary of the treasury was directed to use \$1,800,000,000 of the Exchange Stabilization fund to pay part of the subscription of the U.S. to the International Monetary fund. (See also Gold.)

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(A Bh)

Exchange Equalization Account

See Exchange Control and Exchange Rates.

Exchange Rates

See Exchange Control and Exchange Rates.

Exhibitions and Fairs

See Fairs, Exhibitions, Expositions; Shows.

Expenditure, Government

See BUDGETS, NATIONAL.

Exploration, Polar

The ten years 1937–46 in polar exploration were characterized by a twofold advance: the contribution to geographical knowledge implicit in the discovery and mapping of unknown or little known areas was paralleled by tremendous forward strides in the accumulation of scientific data. And a concomitant of both phases was the development of new and improved techniques, especially in the way of transport and supply, clothing and diet.

The extent of the work being done immediately prior to the outbreak of World War II was evidenced by the fact that in 1937 and 1938 there were nearly 100 expeditions in the field in the Arctic and several in the Antarctic. After 1941, exploration in the Antarctic virtually ceased for the duration of the war, but in the Arctic the story was quite different. Although private expeditions were halted, the war provided a stimulus to government activity, and a great deal of scientific work, particularly in the fields of meteorology, hydrography and photogrammetry, was accomplished by the armed forces of the Allied nations. The results of this activity, heretofore restricted for reasons of military security, were just beginning to be released at the end of the decade. There were, however, important and interesting developments to be noted in connection with the expeditions at work in the first half of the decade.

Arctic.-One of the most dramatic events in polar exploration after the achievement of both poles was the establishment in 1937 of the soviet North Polar station and the subsequent voluntary drift of four men on an ice floe for nine months. The party, with all its equipment, was landed by air on a large ice field near the North Pole latitude 89° 26' N., longitude 78° W.) on May 21. About 274 days later, the men were removed by ice-breaker at a point off the east coast of Greenland (latitude 70° 48' N., londitude 19° 48' N.) to which they had drifted. During the period of the drift meteorological, magnetic, hydrological and other scientific observations were made regularly. The movement of the ice was studied, and it was found that the average drift of the floe at the northern end of the journey was 2.7 mi. per day. The rapidity of movement increased southward, however, until near the end of the drift the average speed reached 12.3 mi. per day. Hydrological investigations revealed that under a comparatively thin layer of cold Arctic water there exists a much warmer layer of Atlantic water which enters the Arctic sea in a strong current between Spitsbergen and Greenland and thereafter spreads out to cover a large part of the polar basin. The appearance of hare, polar bear and gulls in the region of 88° N. and the presence of plankton in the water disproved Fridtjof Nansen's theory, predicated on observations made in the drift of the "Fram" in 1893-96, that no life exists in the central part of the Arctic sea. Meteorological observations indicated clearly that much calmer weather is experienced in the region of the cold polar cap than in the areas bordering the Arctic sea.

A somewhat similar expedition, also productive of important scientific results, was the drift of the soviet ice-breaker "Sedov," which was trapped in the ice in the Laptev sea in Oct. 1937, and was finally freed by icebreakers

at the threshold of the Greenland sea in Ian. 1040. The contributions of the "Sedov" party to knowledge of conditions in the polar basin were numerous, and only the highlights can be touched upon here. For one thing, the legend of the existence of Sannikov Land, said to have been sighted by Jacob Sannikov off the coast of Kotelny Island in 1811, was finally exploded by twice crossing its supposed position. For another, the northeastern boundary of the Laptev sea was established at 78° 30' N. latitude, 139° E. longitude, where the continental shelf fell off to the great depths characteristic of the central Arctic sea. The existence of Nansen's surmised submarine ridge between Greenland and Spitsbergen was confirmed, the soundings in the middle portion of the ridge registering only a little more than 600 fathoms (3,600 ft.). Meteorological observations showed temperatures considerably higher than those recorded by the "Fram" 45 years before: the lowest air temperature registered by the "Sedov" was -44° F.; the lowest registered by the "Fram" -52° F. The indicated warmer conditions were further confirmed by the thickness of level ice-7 ft. 2 in.—as compared with Nansen's measurement of approximately 11 feet. Nansen's two "laws," namely (1) that the speed of the wind drift is approximately one-fiftieth of the velocity of the wind and (2) that the drift of the ice is deflected from 30° to 40° to the right by the rotation of the earth, were confirmed, and two new "laws" were formulated. These stated that (1) the drift of the ice follows the isobars, with the high-

The "Georgi Sedov" soviet icebreaker which set out in July 1937 to explore a possible 12-month Arctic sea lane, was finally contacted on Jan. 13, 1940, by the icebreaker "Joseph Stalin" (foreground) after 27 months in a drifting ice jam. In Feb. 1939 the "Sedov" had drifted closer to the north pole than any other ship to that time

pressure region to the right of the direction of the drift and the low-pressure region to the left, and (2) the drift of the ice takes place at a speed proportional to the gradient of atmospheric pressure. These new laws confirm the theory of the clockwise movement of the ice around Vilhjalmur Stefansson's so-called "pole of inaccessibility."

An event of considerable interest and colour in the annals of Arctic exploration was the first voyage from west to east through the northwest passage. This was accomplished by the R.C.M.P. vessel "St. Roch" and represented the second ship journey through the famous passage sought by mariners and explorers for centuriesthe first voyage having been made by Roald Amundsen in the "Gjoa," 1903-07, from east to west. The "St. Roch" left Vancouver on June 21, 1940, wintered at Victoria Island from Sept. 1940 to July 1941, and in the summer season of the latter year made her way to Pasley bay on the west side of Boothis peninsula, where the winter of 1941-42 was passed. After spending 11 months in Pasley bay, the vessel broke free early in Aug. 1942, and worked her way through Bellot strait to Pond inlet, finally arriving in Sydney, Cape Breton Island, on Oct. 8, 1942. In 1944, the "St. Roch" further distinguished herself by making the first one-season journey through the passage from east to west, leaving Newfoundland on July 28 and arriving in Vancouver on Oct. 16 after a perilous and eventful voyage of 7,295 mi. This second trip followed a new and more northerly route via Barrow strait and Melville sound. On the other side of the Arctic the northeast passage, perhaps better known as the northern sea route, under-



went considerable development during the decade 1937–46. By 1939, more than 150 meteorological and radio stations were established along its course and numerous expeditions were carrying out hydrographical and ice reconnaissance surveys. During the war, the route played an important part in the vital business of soviet supply, and undoubtedly there was a great increase in the investigation of weather and ice conditions.

Hydrographical observations made in the Greenland sea by the Louise A. Boyd expeditions of 1937 and 1938 revealed the existence of a submarine ridge in latitude 72° 41' N., longitude 2° 55' E. about midway between Bear Island and Jan Mayen. The bank, named for Miss Boyd, measures approximately 7 nautical mi. in length by 3 in width, and rises to within slightly more than 325 tathoms (1.950 ft.) at its highest point. The well-known Danish scientist Lauge Koch added materially to the knowledge of northern Greenland in the course of a flight over Peary Land in May 1938. Several of the important fjords were mapped from the air, and the mystery of Peary channel was solved at last by the rediscovery of the depression that had given rise to the channel legend 38 vears before. This depression was found to consist of a southeastward extension of the J. P. Koch fjord to a point only about 15 mi. from a low-lying lake, the pass between the two being comparatively low. A Norwegian-Swedish expedition to northeastern Greenland in 1939-40 had as its chief goal the investigation of the vitamin content of Arctic foodstuffs at different seasons of the year. Land and marine plants and the flesh and organs of various animals were systematically examined, and the results obtained promised to be of much practical value to Arctic travelers. In southern Greenland, a U.S. army detachment worked in the Angmagssalik area in 1942-43 with the dual purpose of establishing interior meteorological stations and investigating the possibility of emergency landing fields on the ice cap. From their studies, this group was able to draw new provisional contours of the ice cap which revealed the "southern dome" to be higher and more elongated than previously supposed. The Danish Geodaetisk Institut continued its program, based on field surveys, of the publication of sheets of the excellent topographical map of Greenland on the scale of 1:250,000. In Spitsbergen, considerable geological, hydrographical and survey work was done by Norwegian, British and German expeditions.

Several British parties were at work in the Canadian Arctic during the ten-year period. In 1937, valuable mapping and survey work was undertaken by J. M. Wordie on the northeast coast of Baffin Island. In 1937–38, an expedition to Ellesmere Island carried on general scientific studies and contributed a detailed map of a considerable section of the southeastern coast of the island.

In 1941, the five-year British-Canadian Arctic expedition was concluded; during its course maps and surveys were made in the Southampton Island-Foxe Basin-Baffin Island region. A considerable amount of photogrammetrical mapping was also done in Baffin Island and in other sections of Arctic North America by the air forces of the United States and Canada during the war. The published sheets were a distinct contribution to existing cartographic source materials of the region. One of the most important postwar explorations in northern Canada was "Operation Musk Ox," a Canadian government expedition whose primary purpose was the testing of motorized transport and other equipment under Arctic conditions. Twelve specially designed "snowmobiles," navigated by radar and

supplied by radio-directed planes, completed a 3,200-mi. tiek in the spring of 1946. The route described a huge arc from Churchill through Baker lake, Cambridge bay, Coppermine, Norman Wells and Dawson Creek to Edmonton.

Antarctic.—Exploration in the Antarctic area from 1937 to 1941 was productive of fruitful results. Half a dozen major expeditions were in the field during that period, and their reports revealed notable geographical discoveries and significant contributions to the store of scientific data

The British Graham Land expedition of 1934-37, led by John Rymill, returned to England with a fine record of achievement. The peninsularity of Palmer Land (also known as Graham Land) was finally established, as it was proved by ground travel that Stefansson strait and other channels seen from the air by Sir Hubert Wilkins in his flights of 1928 and 1929 were in reality broad, low glaciers Another discovery of importance was a deep channel averaging about 15 mi. in width, which separates Alexander I Land from Palmer Land. This same leature was observed by Lincoln Ellsworth in his trans-Antarctic flight of 1935 and was shown on the map compiled from his aerial photographs as a great faulted depression. The ritt, bordered on either side by mountainous coasts, was named King George VI sound by the Rymill group. The channel was followed for about 200 mi. southward by a sledge party to a point from which it was thought that the southern end of Alexander I Land could be seen. A sledge journey was also made across the southern end of the peninsula from Marguerite bay to the Weddell sea in latitude 69° 50' S. and the party then surveyed about 140 mi. of Palmer Land's east coast as far as 70° 40' S. The land was found to rise gradually from the west coast to an altitude of more than 7,000 feet, while east of the ice divide it became broken into mountain ranges with intermountain plateaus at various levels. A fourth major discovery was that the area of Alexander I Land was found to be nearly three times as great as previously supposed. Surveys and flights indicated the island's length to be about 300 mi.; its width was still unknown. Other achievements of the expedition included the compilation of a detailed map of the Marguerite bay area and some very interesting geological work leading to the discovery that the rocks of Graham Land and of many of the coastal islands are of igneous types closely allied to the Andes of southern South America.

Concurrently (1936–37), in another section of the continent, a Norwegian expedition under Lars Christensen was also making important discoveries. New land was found between 40° E. and 34° E. and was christened Prince Harald Land. This area was mapped from the air, as was the entire coast from West Barrier to Enderby Land. Altogether, the maps constructed from air photographs taken by the expedition covered an area of about 3,000 sq.mi., including nearly 1,250 mi. of coastline. In Princess Ragnhild Land a mountain range was discovered, extending for well more than 150 mi. in length and apparently about 10,000 to 13,000 ft. in height.

The year 1937 saw, too, the fifth commission of the Discovery committee's vessel, "Discovery II." The program of this voyage, which was concluded in 1939, contained two main items: a circumnavigation of the continent in the summer season to provide data for comparison with observations made during a similar voyage during the winter of 1932; and the recording of a long series of repeated observations on the Greenwich meridian and 20° E. Both projects were successfully completed, and a new chapter was added to the vessel's long history of accomplishment in the field of marine biology. As with

earlier cruises, emphasis was mainly on whales and their physical and biological environment, but various other aspects of the voyage are also of interest. During the circumnavigation of the continent the position of the pack ige was charted and a map giving mean positions for the months of September through March was constructed. The ice barrier between 0° and 5° E. was also charted, with a fairly reliable determination of the position of a part of the coast in that area. Virtually no indication of the continental shelf was found there, the land apparently dropping off steeply with a gradient as much as one in six. The barrier where first encountered was found to be floating in some 1,114 fathoms (6,684 ft.) of water.

Unusually heavy pack ice in the 1938-39 season delayed Lincoln Ellsworth's fourth Antarctic expedition and, together with a great deal of bad flying weather, prevented several long flights originally planned, but one major flight was accomplished. This was made on a direct course from latitude 68° 30' S. to about 72° S. on the longitude of 79° E.—a distance of more than 210 mi. Visibility was good, and at the turning point the country for some 100 mi. further south could be seen. In all, the flight provided a view of about 80,000 sq.mi. of the continent never before seen. The entire area seemed to present a gradual slope upward to a surface altitude of about 11,500 ft. No mountain ranges or patches of bare land were seen after leaving the coastal belt of hills. Previous to the flight, a visit had been made to a group of islands fringing the coast of Princess Elizabeth Land in latitude 69° 10' S., longitude 76° 30' E. A brief geological reconnaissance showed the structure of the islands to consist of granite and gneiss, with traces of iron, copper and nickel.

The German Antarctic expedition of 1938-39 on the catapult ship "Schwabenland" worked in the area between 12° W. and 20° E., and a map of this region was compiled on the scale 1:1,500,000. Nine exploratory and seven photographic flights resulted in the observation of approximately 231,000 sq.mi. of territory and the photogrammetrical mapping of an estimated 135,000 sq.mi. The "farthest south" reached in the flights was approximately 76° on the Greenwich meridian. The altitudes of a num-

ber of mountain peaks and various points in the ice field were determined, and meteorological, oceanographical, geophysical and other scientific observations were recorded.

One of the most extensive and ambitious of expeditions to work in the Antarctic was the U.S. Antarctic service expedition of 1939-41 under the command of Rear Adm. Richard E. Byrd. Two bases were established nearly 2,000 mi. apart-a west base in the Ross sea area (Little America III) and an east base in Palmer Land (Graham Land). Preliminary reports of the two parties indicated a number of important contributions. The main southern sledge journey from the east base discovered and surveyed about 460 mi. of new coastline and made astronomical determinations of the positions and elevations of 320 major mountain peaks. The real event of this journey, however, was the discovery of a southward and westward extension of the British Graham Land expedition's King George VI sound, terminating in the open sea. Alexander I Land was thus proved to be an island, as inferred by the British group. Exploration from the west base was projected by means of five reconnaissance field parties and two aeroplanes. The field parties were mainly concerned with scientific survey work in the coastal mountains to the east of Little America.

Aerial reconnaissance extended eastward from the base to approximately longitude 120° W. and during these flights survey photographs were taken for the later compilation of maps. Exploration to the west of the base resulted in a continuous aerial survey of approximately 400 mi. of the barrier face, and operations to the south were directed toward filling in the gap of mountains between Liv and Beardmore glaciers. In addition to the exploratory work undertaken by both bases, three cruises of the plane-equipped "Bear" led to the discovery of nearly 800 mi. of hitherto uncharted coastline and the exploration of more than 100,000 sq.mi. of unknown land to the east of Little America.

The scientific work of the expedition provided a rich

Antarctic explorers of the U.S. expedition under Rear Admiral Richard E. Byrd waving farewell to the flagship "North Star" as it left for exploration operations in 1940



harvest of interesting data. Observations were made in the fields of meteorology, geophysics, geology, biology and physiology (including studies of clothing, diet and the physiological effects of cold). Among the most interesting findings were those of the geologists to the effect that (1) King Edward VII Land and Marie Byrd Land together appear to be a separate petrographic and structural province and (2) the Antarctic Andes do extend south of latitude 72°, at least along the Weddell sea coast of the Palmer peninsula. One other phase of the scientific work also deserves to be noted, namely the detailed studies of the ice comprising the great Ross barrier.

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Byrd Expedition of 1946-47.—The Byrd expedition, 1946-47, made under the auspices of the U.S. navy, was the fourth Antarctic mission led by Rear Adm. Richard E. Byrd. Specifically, the operation was designed to train personnel for combat conditions in polar regions and to enlarge geographical knowledge.

Byrd was in technical charge of the expedition, which consisted of more than 12 ships with a personnel of 4,000 officers and men. The mission sailed Dec. 2, 1946, with eight of the craft leaving from Norfolk, Va., and four others from San Diego and Port Hueneme in California. Adm. Byrd left Jan. 2, 1947, on board the U.S. aircraft carrier, "Philippine Sea." As the Antarctic summer drew to a close in March 1947, the expedition began its evacuation northward. Early reports said fliers found areas of ice-free lakes and evidence of coal and other important mineral wealth.

(See also Anthropology; Archaeology; Smithsonian Institution.) (X.)

Explosions

See DISASTERS.

Export-Import Bank of Washington

The Export-Import Bank of Washington was established in 1934 to help stimulate the recovery of the foreign trade of the United States from the low level to which it had fallen during the depths of the depression. The bank was continued as an agency of the U.S. government by acts of congress in 1935, 1937, 1939 and 1940 and was made a permanent independent agency by the Export-Import Bank act of 1945, approved July 31, 1945. The purpose of the Export-Import bank, as laid down by the U.S. congress, was to aid in "the financing and facilitating of exports and imports and the exchange of commodities between the United States or any of its territories or its possessions and any foreign country or the agencies or nationals thereof." The bank was given broad powers to make practically any type of loan insofar as the exercise of these powers was necessary to carry out the fundamental purpose.

During the early years of the bank's operations from 1934-39, it operated on a relatively restricted scale. Thus, the amount of loans authorized by the bank during this period averaged less than \$50,000,000 a year, and disbursements were less than \$20,000,000 annually. Although the bank engaged in a variety of operations during these

early years in a manner typical of the flexibility of its operations throughout its existence, its principal activities consisted of credits extended to U.S. exporters, especially exporters of agricultural products and heavy equipment, to assist in financing transactions involving terms too long for financing by commercial banks. Precedents were set, however, for loans to foreign governments or their agencies to assist in financing development projects and programs in foreign countries, as well as in maintaining purchases from the U.S. of essential products.

Wartime Activities.-The events of 1940 brought the bank into a much enlarged sphere of operations. In the course of the year, congress twice increased the lending limit of the bank, in the first instance from \$100,000,000 to \$200,000,000 and in the second instance from \$200,000,-000 to \$700,000,000. The second increase was authorized in order to enable the bank to render financial assistance to the other American republics in maintaining their economies in the face of the disruption to trade resulting from World War II. There followed a series of authorizations for credits to Latin American governments to be used for carrying out public and other useful works projects, particularly railroads and highways, and credits to Latin American central banks to permit the purchase and importation from the U.S. of products essential to the economic life of the other American republics. New loan authorizations in 1940 were \$371,000,000; in 1941, \$180,-000,000 and in 1942, \$264,000,000.

Because of wartime shortages of goods and of shipping and the consequent difficulty of obtaining equipment and materials from the U.S. for new projects, loan authorizations by the bank fell to relatively small figures in 1943 and 1944, during which years they averaged about \$50,000,000 a year. The financing agreed to in the early war years nevertheless went forward and gave substantial support to the economies of the Latin American countries during a period of difficult adjustments to wartime circumstances. The bank also played a role, in co-operation with other agencies of the U.S. government, in stimulating the production of strategic materials in Latin America and elsewhere for shipment to the U.S.

Postwar Activities.—With the end of World War II in sight, preparations were made to make the Export-Import bank an effective instrument for financing the initial requirements of liberated and war-devastated countries for U.S. goods. The result was the Export-Import Bank act of 1945, which increased the limit on the loans and guaranties of the bank from \$700,000,000 to \$3,500,000,000 and removed the prohibition on loans by the bank to governments in default on their obligations to the U.S. government.

During the first year of peace, that is, from the middle of 1945 to the middle of 1946, the Export-Import bank authorized new credits amounting to approximately \$2,200,000,000. The loan commitments made by the bank during this period were mainly to liberated and wardevastated countries for reconstruction purposes. These reconstruction credits were used to meet the most urgent requirements of war-torn countries for U.S. products and services. They served the vital purpose of helping rebuild the economies of the countries concerned and thus hastening the restoration of normal trading relationships between these countries and the U.S. and the rest of the world.

Through its reconstruction credits extended during this period, the Export-Import bank was also filling a gap in the facilities for providing dollar credits to foreign countries pending the coming into operation of the International Bank for Reconstruction and Development (q.v.).



"As the Rest of the World Sees Us" by Coffman of the Ft. Worth Star-Telegram. Export-Import bank loans were the only means, other than cash payments, for foreign purchases of U.S. goods after the termination of lend-lease on Aug. 21, 1945

At the same time, the Export-Import bank maintained its traditional function of financing and facilitating the foreign trade of the U.S. by means of credits extended to U.S. exporters and importers, and credits extended to foreign governments in connection with development projects.

Types of Credit.—The detailed operations of the Export-Import bank resembled those of any lending institution, and its techniques were those commonly used in the field of international finance and investment. Any attempt to classify the credits of the bank into hard and fast categories is difficult because of their great diversity. However, the following types of operations undertaken during the ten-year period 1937–46 may be identified:

- 1. The bank extended relatively short-term credits to all exporters of a given commodity to assist in financing the sale and export of agricultural surpluses. For example, before World War II, the bank assisted in the sale of raw cotton to foreign spinners and dealers by establishing through U.S. commercial banks lines of credit available to U.S. cotton shippers and guaranteed by leading banks in the countries of purchase. Credits of this type were important before the war, and the bank arranged similar credits immediately following the end of the war.
- 2. The bank extended credits directly to U.S. firms exporting individual products, particularly heavy machinery and electrical and railway equipment. Such transactions were usually accomplished through the purchase by the bank without recourse of the obligations of the foreign purchaser endorsed or otherwise unconditionally guaranteed by a foreign bank or a foreign government.
- 3. The bank extended credit lines to individual firms which were experienced and of good repute but which

were hampered by lack of capital in obtaining adequate accommodations from private sources. Such credits were revolving and were available to the exporter for limited periods, generally from year to year, upon presentation for discount by the bank through an agent commercial bank of 90-day drafts on approved foreign purchasers. Comparable arrangements were made available to U.S. importers.

- 4. The bank extended credits to make possible the maintenance of essential purchases from the U.S. by certain countries during periods when they were temporarily short of dollar exchange. The loans to Finland and China before World War II were of this type, and there were a number of credits established for this purpose during the war in favour of banks in Latin American countries. The postwar reconstruction credits to liberated and wardevastated countries also fell in this general category.
- 5. Credits were extended to foreign governments and their agencies to assist in financing the cost of materials, equipment, and services required for the construction of productive public works and the development of natural resources, and thereby to increase the foreign trade potentials of the countries concerned. Prior to the large postwar reconstruction loans by the bank, credits of this type made up the major part of the bank's outstanding loans.
- 6. The bank established a number of credits during World War II to stimulate foreign production and expedite the transportation of strategic materials required for war production in the U.S.

Management.-The Export-Import Bank act of 1945 placed the management of the bank in a board of directors consisting of the secretary of state ex officio and four fulltime directors appointed by the president of the U.S. by and with the advice and consent of the senate, one of whom was designated by the president as chairman. Participation by other U.S. government agencies in shaping the policies of the bank was provided through the National Advisory council, consisting of the secretary of treasury, chairman, the secretaries of state and commerce, the chairman of the board of governors of the federal reserve system, and the chairman of the board of directors of the Export-Import bank. The council was responsible for coordinating the policies of the Export-Import bank with those of the U.S. representatives on the Monetary fund and International bank and with all other agencies of the government to the extent that they made foreign loans or engaged in foreign financial transactions. (See also Invest-MENTS ABROAD, U.S. AND BRITISH.)

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Exports

See AGRICULTURE; INTERNATIONAL TRADE; TARIFFS. See also under various countries.

Expropriations

See International Law; Petroleum.

Eye, Diseases of

A common disorder of the eyes to which Sir Stewart

Duke-Elder gave the name of keratoconjunctivitis, was attributed to deficient lacrimation due to disease or atrophy of the lacrimal gland. It may be associated with xerophthalmia (laryngopharyngitis sicca) and enlargement of the parotid glands, which constitutes the Sjögren's syndrome. If keratoconjunctivitis sicca occurs alone without obvious systemic disorders, it may be difficult to determine the true nature of the condition. The patients complain of burning, pricking and smarting of the eyes, sometimes of photophobia. There is a characteristic stringy mucoid discharge which is difficult to remove. Sometimes a dryness of the eyes is noted, but in some cases deficiency of the lacrimal secretion is not evident on general inspection nor is the victim of the disease generally aware of a lack of tears. It is found commonly in young girls from 12 to 16 years of age after a mild bout of fever accompanying swelling of the lacrimal and salivary glands. In such cases there is a troublesome dryness of the mouth and throat requiring the taking of extra fluids with ordinary meals. The changes in the eye are most pronounced on the cornea, characterized by scuffing and roughing of the corneal epithelium and in severe cases the formation of epithelial threads, a condition known as filamentary keratitis. The amount of lacrimal secretion can be measured by a method devised by O. Schirmer, using strips of filter paper 5 mm. in width and 35 mm. in length. One end of a strip of filter paper is placed in the lower cul-de-sac of each eye at the inner angle near the punctum and the rest of the strip is allowed to protrude. With normal lacrimation the strip of filter paper rapidly becomes moist. The extent of the moisture is measured in millimetres from the eyelid margin in one to five minutes. Deficient lacrimation is not uncommon in women at about the menopause. With the involvement of the salivary glands the lacrimal gland may become markedly deficient in secretion, giving rise to annoying uncomfortable burning sensations of the eyes during prolonged periods of reading, viewing motion pictures, etc. The changes in the ocular tissues are due entirely to lack of wetting.

It was determined by careful anatomical studies that the normal cornea is covered by three protective layers of secretion. The first layer in contact with the cornea gives the epithelium a polished surface which aids in keeping it optically clear. The next is a layer of tears from the lacrimal gland and the third or outer layer is secreted by the marginal lid glands. In cases where lacrimal secretion is deficient the secretion from the Meibomian and marginal lid glands is excessive and yet does not wet the cornea. Various methods had been employed in treating a form of drying of the surface of the eye called keratoconjunctivitis sicca. These methods included the administration of drugs affecting the sympathetic nervous system so as to stimulate secretion from the glands, the application of substances to stimulate the flow of tears, and the application of artificial tears to relieve the irritation. Later, surgical blocking of the tear ducts was tried, using electric coagulation so as to hold some fluid on the surface of the eye.

Nicotine Amblyopia.—The ganglion cells of the retina and their fibres are extremely susceptible to the action of toxic substances. Some of these affect the peripheral cells, but most of them affect the central cells or fibres and thus interfere with central vision. Most of the toxins which cause central visual defects also cause peripheral neuritis, but tobacco is an exception. Only the visual elements distal to the chiasm are susceptible and it is probably the gang-

lion cells alone that are concerned in all types of toxic amblyopia. Tobacco belongs to the group of poisons which affect the central nerve elements of the retina. The poison may be absorbed by smoking, chewing, snuffing or eating tobacco so that the toxic substance is not necessarily a distillation product. In a series of reported cases the smallest quantity of cigarettes producing amblyopia was 70 a week. In all but the most advanced cases the prognosis is good if the use of tobacco is discontinued. Patients with tobacco amblyopia treated with intramuscular injection of acetylcholine responded with return of vision. The theory that damage to the optic nerve in tobacco amblyo pia is due to constriction of the arterioles is the basis for the use of vasodilator drugs in the therapy of nicotine intoxication. Good results from treatment were reported even though some of the patients continued to use some to bacco while under treatment. W. E. Herrell and P. L Cusick demonstrated the vasospastic effect of inhalation of tobacco smoke by photographing the retinal vessels of hyperactive individuals before and after inhalation of tobacco smoke to demonstrate arteriolar spasm. In cases of tobacco amblyopia without optic atrophy, visual improvement obtained with intramuscular injection of acetylcholine chloride roughly paralleled that obtained with intravenous injection of sodium nitrate. This lent additional support to the hypothesis that tobacco amblyopia is due primarily to vascular spasm in the visual pathway. Nourishing diet aids in recovery. Alcohol interferes with nutrition to the extent that it leads to inadequate diet and deficiency of the vitamin B complex.

Recurrence of nicotine amblyopia is uncommon but there are some cases on record. Cases of so-called tobacco-alcohol amblyopia were treated with vitamin B with satisfactory restoration of visual acuity and normal visual fields without decrease in the alcoholic intake or change in diet. When vitamin B was discontinued, the amblyopia recurred, and when it was again used, essentially normal vision was obtained. There was evidence to show that bet ter results were obtained by using the whole vitamin B complex rather than thiamin.

Trachoma.-A contagious disease of the conjunctiva prevalent throughout the world and responsible for innumerable cases of blindness was found to be due to an aetiologic agent which belongs to the group of filtrable virus. Trachoma is particularly prevalent in Egypt, India, the Mediterranean countries and among the North American Indians. The virus which proved to be the aetiologic factor in trachoma is identical with elementary and initial bodies found in the inclusion bodies of Prowazek-Halberstaedter. It was doubted in 1946 that trachoma was a specific infectious disease. No culturable bacterial disease was shown to produce trachoma when experimentally innoculated into man. The disease can be transmitted to healthy eyes of animals and man only by direct innoculation of cultivable material from a case of trachoma. Trachoma in American Indians was treated by Fred Loe of the U.S. public health service in the Rose Bud Indian reservation with sulfanilamide in 1938. Small doses of the drug (one-quarter to one-third of a grain per pound of body weight) with an equal amount of sodium bicarbonate were given once daily. The astonishing results were improvement of subjective symptoms in 72 hours, improvement of vision with disappearance of vessels and scars in the cornea in five days.

In countries other than the United States the effect of sulfanilamide was studied in a large group of cases of trachoma. With a few exceptions the cases were of the severe type with corneal complications. The conjunctivitis

and corneal complications responded especially well to sulfanilamide. The action of sulfanilamide is not specific for trachoma because other forms of conjunctivitis and corneal lesions have also reacted favourably to sulfanilamide. Gonorrhoeal ophthalmia responded on the usual basis of treatment (one grain to one pound of body weight) given orally. Patients with red, chemotic, bulbar conjunctivas, swollen retrotarsal folds and tumefied lids showed uniformly prompt subsidence. Since this type of patient is more likely to have involvement of the cornea if untreated, the rapid arrest noted with sulfanilamide is responsible for a much better prognosis. Sulfanilamide, when combined with some of its derivatives, seems to be more effective than when used alone. Intramuscular administration of sulfanilamide and sulfapyridine suspended in oil has the same therapeutic effect as oral administration but the advantage of prolonged action, smaller doses and less toxicity.

Blood estimation showed that sulfanilamide administered intramuscularly is present in the blood for approximately four days, while sulfapyridine remains in the blood for from 10 to 14 days whether suspended in physiologic solution of sodium chloride, olive oil, or 0.8% sodium hydroxide. The minimum therapeutic level appears to be between 2 and 2.5 mg. per 100 cc. In the intramuscular administration of the drug the dose is 2 to 5 grains per injection, depending on the weight of the patient, of sulfanilamide being given every 4 days and sulfapyridine every 7 to 10 days. Two to six injections are usually sufficient. For treatment of patients with trachoma who cannot tolerate sulfanilamide, neoprontosil (oral), because of its low toxicity, lends itself well to the treatment of trachoma when rather prolonged therapy is necessary. Although results of treatment with neoprontosil were not nearly so dramatic as those with sulfanilamide, on prolonged treatment the results in trachoma compared favourably with those of sulfanilamide, although the latter appeared to be the preferable drug.

Therapy.—After 1938 the sulfonamides revolutionized therapy of a number of ocular infections including trachoma, inclusion conjunctivitis, lymphogranuloma venerarum, gonorrhoeal ophthalmia, streptococcic pseudomembranous conjunctivitis, pneumococcic pyocyaneus, streptococcic ulcers, erysipelas, impetigo of the lids and staphylococcic blepharoconjunctivitis. The sodium salts of sulfathiazol and sulfadizine in powder form were used therapeutically in experimental and clinical wound infections with success. Despite alkalinity, these drugs could be used for corneal ulcers either in powder form or in ointment.

The favourable results of treatment of both local and general infections with penicillin gave rise to a new era in the therapeutic management of some ocular diseases. Penicillin and its derivatives were found to be particularly effective in retarding the growth of certain types of pathogenic bacteria when injected into the blood stream or when injected intramuscularly in sufficient amounts to maintain a stated blood level. For intraocular infections, penicillin was found to be effective when introduced into the blood stream. The good results with penicillin in some experimental intraocular infections of the interior segment of the eye and the anti-bacterial activity of penicillin in vitro against most organisms found in intraocular infections led to the use of penicillin introduced directly into the eye, either by direct injection into the anterior chamber or by ion transfer. The latter method was employed by Ludwig von Sallmann and Karl Meyer. The penicillin used was obtained from a strain of Penicillium notatum.

Introduction of 0.25% solution of sodium penicillin in the aqueous by ion transfer led in 45 minutes to a maximal concentration of 40 micrograms per cc. After a single application of solution of the sodium salt by ion transfer the aqueous exhibited antibacterial activity for almost four hours. Clinical studies of the effect of penicillin in external and internal diseases of the eye showed the drug to be more effective when used in combination with sulfadiazine.

Cataract.-Following the use of dinitrophenol, a drug recommended in the treatment of obesity, cataract developed in otherwise healthy and unaffected eyes. Many instances of rapidly developing cataract of a characteristic morphology occurred in relatively young persons in whom thorough study failed to reveal any aetiologic factor other than dinitrophenol. A total of 18 gm. of dinitrophenol was sufficient to cause cataract in one case. The average taken in all reported cases was 73 gm. and the amount ranged from a minimum of 9 gm. to a maximum of 126 gm. The onset of visual symptoms followed by a month to one year the discontinuance of the drug. Dinitrophenol intoxication, besides causing cataracts, increases the respiratory rate and causes loss of appetite, emaciation, disturbances of hearing, oedema, icterus, agranulocytosis, neuritis, kidney and liver disturbances, peripheral neuritis and abortion. Discontinuance of the drug and therapeutic treatment are of little or no avail after vision is disturbed beyond usefulness. Surgery is relatively easy, and surgical and optical results are uniformly good. The interesting observation was made that all cases occurred in the United States. This was probably due to use of an impure form of the drug.

Other toxic substances are known to produce cataract in dogs and albino rats by intravenous administration of a hypertonic solution; some of the most potent are sodium chloride, sodium sulphate, lythium chloride, galactose, arabinose, xylose, glycerine, ethyline glycol, amino acetic acid, sodium lactate and ethyl alcohol. The reaction on the lens appeared to be due to the hypertoxicity rather than to the chemical nature of the solution.

In 1942 N. M. Gregg reported the occurrence of congenital cataract and other congenital abnormalities in the infants of mothers who had German measles (rubella) early in pregnancy during a severe epidemic of the disease in Austria. Toxic or infective process in the mother may cause a derangement in the lens of the foetus. Gregg suggested that as an alternative to German measles the rash might have been a toxic exanthema caused by streptococcus. During the following years the occurrence of congenital cataracts in infants born of mothers who had rubella during the early months of pregnancy began to multiply as the knowledge of the association of the conditions became generally distributed. In most reported instances rubella occurred in pregnant women during the first two to six weeks of pregnancy. Some did not even realize that they were pregnant at the time the disease occurred. The disease is of a mild type, but in all there was a rash and a history of contact with some person suffering with rubella.

As to the prevention of rubella cataract, it was suggested that all young girls be exposed to rubella to avoid contracting the disease during pregnancy. Also the question arose as to whether or not therapeutic abortion is indicated if the disease is contracted in the first three months of pregnancy.

In addition to cataracts present at birth other congenital defects were noted in infants and attributed to

the fact that the pregnant woman had suffered from German measles (rubella). Among the eye defects observed were failure of the eye to develop fully so that the eveball was too small and also blocking of the tubes passing from the eye to the nose. These changes were believed to be due to inflammation of the tissues of the child while it was still in the mother's uterus. Other congenital defects included disturbances of the heart, clubfoot, failure of the testes to develop and to pass into the scrotum, and failure of development of the urethra which carries the urine from the bladder to the point of exit.

The therapy of congenital cataract is surgery.

Surgery.—Enucleation of the eye calls for a substitute for the eyeball for cosmetic effect. Several procedures were adopted, the most common being the insertion of a blownglass artificial eye. This substitute for the eyeball was not satisfactory because a lack of movement of the artificial eye was apparent in most persons who wore one, and the eye usually gave a sunken appearance caused by atrophy of the orbital tissues.

There are three major reasons for removal of an eye, and the type of operation to be performed and the type of substitute worn depends upon the reason for the removal. In cases of tumour of the eye and of serious damage from blows the danger of involvement of the second eye with severe inflammation and loss of sight had been prevented by removal of the damaged eye. By 1946, the presence of glaucoma with increased intraocular tension or of tuberculosis of the eyes with great pain was an indication for removal of the eye. Other surgical procedures, however, were sometimes considered successful in controlling the conditions as well as complete removal of the entire eyeball. In cases of blind unsightly eyes that offend the æsthetic sense evisceration is the operation of choice. The best cosmetic result in removal of the eye follows the operation of evisceration with implantation into the scleral cavity of some substance over which or to which a prosthesis may be fitted. If that operation is contraindicated by an acute infection, simple evisceration may be performed with subsequent implant in the scleral capsule when the infection has subsided. If the condition indicating removal is one of tumour or possible sympathetic ophthalmia, the cosmetic results must be sacrificed in favour of enucleation with implantation.

A great stimulus to the perfection of substitutes for enucleation arose in the military services during World War II in an effort to supply suitable artificial eyes for wounded men. A satisfactory prosthesis developed by Dr. A. D. Ruedemann won the Gold Medal award at the scientific exhibition of the American Medical association in 1946. It consists of a tantalum mesh to which is attached an acrylic prosthesis on which is painted a replica of the color segment of the fellow eye. Deficiencies in the orbit may be met by implanting rolled tantalum mesh and sewing it in position to prevent sagging of the prosthesis or the eyelids. The tantalum does not set up tissue reaction. It is not acted upon by body fluids and lies indefinitely without absorption or corrosion. When the eye is enucleated, the ocular muscles are identified, brought back to normal position on the tantalum mesh substitute, and firmly anchored by means of cat gut sutures. In this way the normal position of the eye is maintained, and move ment of the artificial eye is facilitated. The use of tantalum mesh and acrylic gives most satisfactory results.

Contact Lenses.—It appeared during the decade 1937-46 that contact lenses would never be a substitute for spectacles for most people, but they would be an important visual adjunct to many patients who must have correction of their refractive errors but do not wish to use spectacles for public appearance and social engagements. Many patients need contact lenses for sports or occupational uses where regular glasses cannot be used. There are some patients who cannot obtain good vision with any other ophthalmic device. Patients with keratoconus, high astigmatism, asymmetric astigmatism, irregular astigmatism and some types of scarred cornea compose this group. The contact lens offers the only practical method of obtaining binocular vision in monocular aphacia. Often high myopes obtain better vision with contact lenses than with spectacle lenses. Therapeutic contact lenses provide the only perfect means of correction of refractive errors. Since the lens rotates with the eye the optical centre of the lens and the immediately adjacent area alone is used. Regular spectacle lenses limit the field of corrected vision obtained by rotation of the eye. Aberrations become effective in the peripheral area of the spectacle lenses and distort the

During the decade many methods of fitting contact lenses were used, including a number of moulding techniques. The five necessary steps in fitting contact lenses were: (1) refraction with trial contact lenses to determine the radius of curvature of the posterior surface and power of the contact lens needed to correct ametropia; (2) making the impression of the eye to obtain scleral shape and corneal diameter; (3) fitting the semifinished lenses; (4) refraction of the patient's eyes while wearing the semifitted lenses; and (5) selection of tolerable solution.

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Fabrics

See Fashions, Women's.

Facsimile Transmission

See RADIO; TELEGRAPHY.

Facts and Figures, Office of

See WAR AND DEFENSE AGENCIES.

Fadden, Arthur William

Fadden (1895-), Australian politician, was born April 13, 1895, in Ingham, Queensland, Australia. He won a seat in the Australian house of representatives in 1936 and became acting prime minister while Robert Gordon Menzies represented Australia at London conferences in 1941. Growing Australian dissatisfaction with Britain's conduct of World War II led to the downfall of the Menzies government, and Fadden became prime minister on Aug. 28, 1941. At the same time he was unanimously elected leader of both the Country party (his own party) and the United Australian party. But foes of the Menzies regime contended that the new Fadden government was merely a continuation of the Menzies government, and on Oct. 3, 1941, Fadden's cabinet fell after a tenure of only

37 days. As a courtesy to Australia and to its former prime minister, Fadden was appointed to the British privy council on April 4, 1942.

Fair Employment Practice Committee

The Fair Employment Practice committee was established June 25, 1941, by President Franklin D. Roosevelt for the purpose of assuring all workers equal opportunity in war production and government service regardless of their race, colour, creed or national origin.

Discriminatory barriers against minority group members were currently revealed in the fact that Negro and Mexican-U.S. workers were being turned away from defense plants which welcomed white applicants. The executive order which established FEPC forecast the subsequent war need for the fullest use of the entire U.S. work force, and at the individual worker's highest attainable skill. A corollary aim was to bolster the morale of minority groups, on the premise that the defense of democracy demanded the full participation in the war effort of all groups within the nation.

The first committee appointed by the president had only limited means to handle the many cases of discrimination filed with it. Reliance was placed mainly on public hearings which demonstrated the widespread existence of discrimination.

On May 27, 1943, President Roosevelt issued the executive order which set up a new FEPC and made mandatory that all war contracts and subcontracts include a non-discrimination clause. Increased funds permitted extension of the committee's services to 15 field offices in major industrial cities. The War Manpower commission, war and navy departments and other contracting agencies were originally responsible for ending discrimination within their jurisdictions. FEPC made agreements with them to process the cases which they could not settle.

The committee received during the last two years of World War II an average of more than 300 complaints of discrimination a month. About two-thirds of these were dismissed for lack of jurisdiction or merit. One hundred satisfactory settlements of valid complaints were made each

Views of three major fairs, left to right: the Tower of the Sun, looming above one of the Elephant Towers at the 1939 Golden Gate International exposition, San Francisco; Japan's exhibit at the 1937 Exposition Internationale, Paris; and Constitution mall at the New York World's fair, 1939—40

month, mostly by informal meetings of the field staff with management and workers. Some 40 racial strikes were ended through committee staff aid.

The war need for workers, and the removal of discriminatory barriers by FEPC and other agencies, placed 1,500,000 Negroes and Mexican-Americans in the prime war industries at peak employment in Nov. 1944. Nearly 300,000 Negroes were then in government service, including army and navy civilian establishments.

Congress voted FEPC a \$500,000 appropriation for the fiscal year 1945. Next year this was cut to \$250,000. The agency halved its staff in July 1945. The end of the war that summer diminished its influence. A bill to establish a permanent peacetime FEPC was tabled by Congress after a three week's filibuster in the senate in Jan. 1946.

The wartime FEPC was suspended for lack of funds May 3, 1946. In a final report to President Harry S. Truman, the agency noted a postwar rise in discrimination against Negroes and Jews. It recommended that the president urge upon congress the passage of a law against racial and religious discrimination in industry, and that the government itself take steps to enforce the national policy against discrimination within its own services.

(M. Rs.)

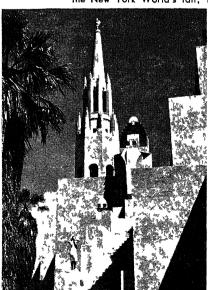
Fairs, Exhibitions, Expositions

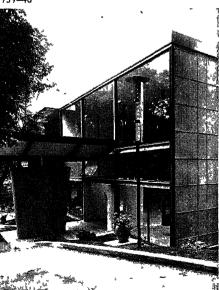
The period of 1937-46 saw three expositions of truly international significance: the Exposition Internationale des Arts et des Techniques in Paris, 1937; the Golden Gate International exposition, San Francisco, Calif., 1939-40; and the New York World's fair, 1939-40—the last two being the first competitive international expositions in the same country at the same time.

The Empire exposition in Glasgow, Scotland, in 1938 was of somewhat limited scope and was a lineal descendant of previous expositions of the empire initiated at London in 1851.

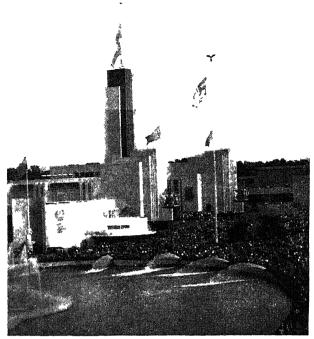
World War II brought the demolition of the properties in Germany which had housed the later Leipzig fairs, outgrowth of an annual event of almost goo years' uninterrupted repetition.

The Paris exposition was essentially European, although Japan and the United States provided their own pavilions









The soviet pavilion, one of the more frequently visited exhibits at the New York World's fair (1939–40)

in company with 15 principal European nations. Like all previous Paris expositions, the 1937 exposition stretched along the Seine. However, it was distinguished from its predecessors in that, with few exceptions, the pavilions represented departures in exposition architecture in both materials and design. The exposition was also marked by more profuse use of colour, especially in floodlighting at night.

Both the Golden Gate International exposition and the New York World's fair were located on sites especially prepared for their use and later adapted for public purposes—in the first instance an airport and in the latter a public park.

The San Francisco exposition was built on Treasure Island, a 400-ac. site created in San Francisco bay with 25,000,000 yd. of sand plus top soil taken from another Island. Landscaping was lavish, and floodlighting was extensively used to accent the blend of oriental and western architecture which characterized the exposition. The purpose of the exposition was to commemorate the completion of the Golden Gate and San Francisco bay bridges and to strengthen the friendship between the U.S. and the nations of the Pacific. Twenty-six nations of the Pacific, the Americas and Europe participated, as did 15 states and territories of the U.S.

The Golden Gate exposition, like the New York World's fair, followed the precedent of the successful Chicago Century of Progress (1933–34) by staying open a second year in an effort to recoup the investment. Like the New York fair, it was not successful financially in spite of the second year of operation. After 1926 the U.S. government had not made significant financial grants to expositions, and private investors had not found it possible to recover their capital in one year of operation. The two-year international exposition was peculiar to the U.S.

The paid attendance of almost 45,000,000 admissions to the New York World's fair established it as the most heavily attended international exposition in history. Spread over a 1,200-ac. area of Flushing Meadows, it represented expenditures by the management, exhibitors and others of an estimated \$200,000,000 for construction and operation.

With minor exceptions, no replicas of historical buildings or types of architecture were permitted. The Board of Design required that all construction emphasize the advantages of temporary construction and new materials. While the pressure of time during the construction period did not allow the exposition designers to enforce complete harmony with their plans, the New York World's fair was unique in its display of new types of architecture on a gigantic scale. The fair was also unique in its control of colour effects in both materials and lighting in order to establish predetermined colour patterns over the entire area of the exposition. There was extreme competition between private corporations in the construction of industrial exhibits; this had started at the Century of Progress in 1933 and 1934.

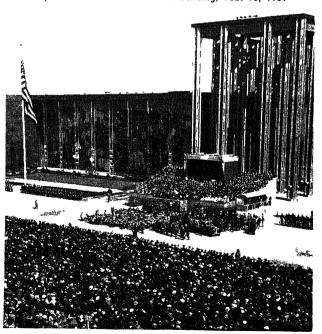
Though the New York fair officially commemorated the 150th anniversary of the inauguration of George Washington as president of the U.S., its primary motif was the world of the future. This theme was expressed in the imaginative "democracity"—the city of the future—constructed in miniature in the perisphere, which with its adjoining trylon was the theme centre of the exposition.

The perisphere was 180 ft. in diameter and the trylon more than 700 ft. in height. This theme centre, with the exception of the Eiffel tower, was unprecedented in management-built exposition structures.

In all, 63 foreign nations participated in the first year of the New York fair and established it as the most international of all such expositions. In addition, 25 states and territories of the U.S. furnished exhibits, many in their own buildings.

The Golden Gate exposition and the New York World's fair detracted from each other's attendance and both suffered from the diversion of public interest and the uncertainty occasioned by the opening of World War II. The New York fair was handicapped particularly by the withdrawal of many foreign exhibitors during its second year—because of their participation in hostilities. (See also Architecture.)

Formal dedication ceremonies of the Golden Gate International exposition outside the Federal building, Feb. 18, 1939



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Fairs, State

See Shows (Animal).

Fair Trade Laws

See Law.

Faisal II

King Faisal of Iraq (1935—) was born May 2, 1935. After his father, Ibn Faisal Ghazi, died April 4, 1939, following a motorcar accident near the royal palace in Baghdad, young Faisal was enthroned as Faisal II. His uncle, Abdul Ilah, was appointed regent to rule the kingdom until Faisal reached his majority at 18. The youthful king was being schooled for his future role by Abdul Ilah and an English governess. Besides Arabic, his native tongue, he learned to speak English and Turkish.

During the pro-axis revolt staged by Rashid Ali in April 1941 Abdul Ilah fled from Baghdad and as-Sharif Sharaf replaced him as regent while the boy king was retained on the throne. After the Rashid Ali rebellion was put down by British arms, Abdul Ilah returned to Baghdad June 1, 1941, and resumed his post as regent.

Falange

See FASCISM.

Falk Foundation, The Maurice and Laura

See Societies and Associations.

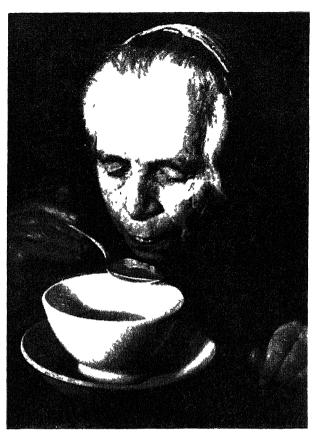
Falkland Islands

See British Empire.

Famines

The world's constant food shortage in the countries of greatest population, India and China, was brought into sharp relief during the latter part of the decade 1937–46 as a result of the organization by the United Nations of two new agencies, the United Nations Relief and Rehabilitation administration (q.v.) and the Food and Agriculture organization (see Agriculture; United Nations). The first of these spread its activities over the world in a manner never before attempted, while the latter began to survey the world's food needs and make plans for better nutrition. Before these organizations began active work, however, the war in China had become a factor in increasing the suffering resulting from food shortages in that part of the world.

From 1937 to the outbreak of World War II in Europe, the principal famines were in China and India. Certain areas had crop failures and were unable to get supplies from other areas of surplus production because of the constantly growing population which consumed these supplies. Poor transportation facilities and ineffective government aid were the principal handicaps. The Chinese provinces of Kwangtung and Honan were so short of food that many deaths from hunger were reported. The rice usually available in Siam and Burma could not be brought in because of the Japanese invasion. Surpluses could not be found in nearby areas in China. Estimates of deaths ranged from 500,000 to 2,000,000 but these were not reliable, as deaths from disease were not distinguished from those resulting from hunger. In Bengal, India, the food shortage grew acute from 1933 to 1943 as the population in-



A hungry European, one of millions who looked to the United Nations for relief from famine after World War II, pending the reconstruction of war-torn economies

creased by many millions. The loss of the 1942 rice crop and the threat of Japanese invasion disturbed the markets, promoted hoarding by those who had the food and left the poorer classes without supplies. Many already on the margin of starvation were reduced to rations below subsistence level. Estimates of deaths from hunger ranged from 250,000 to 1,000,000 persons in Bengal alone. The central government of India shipped large supplies to the stricken regions and held an All-India Food conference to plan for food distribution.

Such facilities were very limited in China due to the Japanese occupation. The use of cargo aeroplanes to transport food to areas in critical need was a chief factor in averting starvation in many areas. Total crop failures were few during the decade, but the drought in 1944 throughout the southern hemisphere severely damaged the cereals. Another drought in India early in 1946 was reported to have reduced wheat output 25%. Scourges of locusts in Sardinia and in Albania were attacked with poisons provided by U.N.R.R.A. The Yellow river project in China to divert the river to an old channel and save thousands of acres from flooding was pushed to completion. Faminelike conditions existed in many areas in Europe during World War II when there was no food for public relief available. Poverty-stricken people suffered, particularly in the cities where bombing had destroyed storehouses and transportation facilities.

Early in 1946 a widespread campaign to save food was begun in the United States after shipments for relief purposes had fallen below the quota expected of the nation. Prices were raised to secure larger shipments of relief wheat and resulted in delivery of the U.S. quota by the middle of the year. Mass starvation was widely publicized

as an imminent possibility, and a special mission, led by former President Herbert Hoover, was sent to several needy countries to appraise the situation. Upon his return, Hoover reported that there would be no mass starvation anywhere with the possible exception of some inaccessible parts of China. It was explained, however, that he did not refer to the deaths that might result from under-nutrition among impoverished people in devastated countries.

The F.A.O. at its second assembly at Copenhagen, Denmark, considered a proposal for a World Food board, supported by the United Nations, to supervise the distribution of food surpluses in a manner to avoid famine conditions and to increase the diets of these countries remaining on a low level of nutrition. The plan was referred to a commission for further study. A survey of prewar conditions showed that the poorest diets in terms of calories were in Korea, Iran, Iraq, Trans-Jordan, Mexico, Colombia and El Salvador. The best were found in New Zealand, Argentina, Denmark, the U.S., Great Britain and Canada. Countries which had experienced famine conditions most frequently were getting about 2,000 calories per day while those in the best-fed group consumed an average of more than 3,000 calories per day. It was estimated that over half of the world's population had available less than 2,250 calories per day. While it was not regarded as possible immediately to increase the food supply of the world sufficiently to lift the diet of the deficient countries to the level of the average, it was thought possible to adjust the distribution of foodstuffs so as to put an end to famines of the extent of the preceding decade. The problem was one of international finance even more than one of production. (See also Agriculture; Food Sur-PLY AND WORLD WAR II.) (J. C. Ms.)

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Far Eastern Commissions

See Allied Control Organization for Japan; Allied Military Government.

Farm Co-operatives

See AGRICULTURE; FARM CREDIT ADMINISTRATION.

Farm Credit Administration

The Farm Credit administration, operating through 12 district offices and numerous local associations in the continental United States and Puerto Rico, in the years from Jan. 1, 1937, through June 30, 1946, extended credit totalling \$8,000,000,000 to individual farmers and their business co-operatives for financing farms, for farm production and for marketing farm products and purchasing farm supplies.

The value to agriculture of the Farm Credit administration, however, was not measured solely in number of dollars loaned to farmers and their organizations. Quite as important were the services rendered by this co-operative system. The biggest contribution of the federal land banks in making long-term farm mortgage (land bank and commissioner) loans had come in the years just prior to the decade 1937-46.

During the decade the FCA made rapid strides in developing the co-operative principles of farmer ownership and control. Farmer borrowers and their business co-operatives increased the proportion of their investment in the

system to total capital stock, as shown by the fact that on July 1, 1946, the institutions supervised had the smallest amount of government capital since the FCA's establishment in 1933. Borrowers—farmers and farmers' co-operatives—had a net investment of \$107,778,700 in capital stock of production credit associations, national farm loan associations, federal land banks, and banks for co-operatives.

Farm Mortgage Credit.—The 12 federal land banks, which had been operating since 1917, were authorized to make amortized farm mortgage loans through local national farm loan associations. Upon obtaining a loan the borrower purchased stock in the association to the extent of 5% of the amount of the loan, and the association in turn subscribed to a like amount of federal land bank stock. The association endorsed and thereby became liable for the repayment of the loan. The banks obtained funds for making loans through the sale of bonds, and the difference between the bond interest rate and the interest rate on the loans gave sufficient operating spread, under normal conditions, to permit the banks to pay all costs of operations, build up reserves and absorb losses which might occur on defaulted loans.

During the period from Jan. 1, 1937, through July 1, 1946, the federal land banks made 165,921 loans for \$649,490,395 and strengthened their own financial position and that of the national farm loan associations.

Beginning in 1933, the federal land banks also acted as agents for the land bank commissioner and the Federal Farm Mortgage corporation in making and servicing commissioner loans and, like land bank loans, this source of credit was made available through and serviced locally by the national farm loan associations. During the period from Jan. 1, 1937, to July 1, 1946, 181,035 commissioner loans aggregating \$303,553,721 were made.

On July 1, 1946, the capital stock of 11 of the 12 federal land banks was owned by the local national farm loan associations and those borrowers who had obtained direct loans in localities where the services of national farm loan associations were not available. Stock in the federal land banks owned by national farm loan associations and direct borrowers totalled \$65,790,086 on July 1, 1946. In addition, the banks had accumulated reserves and earned surplus of \$167,705,709, or a total of \$233,495,795 on July 1, 1946, compared with \$163,764,591 on Jan. 1, 1937. During the fiscal year 1945-46, eight of the federal land banks paid dividends on their capital stock, and in many cases these dividends were passed on to borrowers themselves by the associations after setting aside legal reserves required by law and such other reserves as might be justified by sound business practices.

As a result of high commodity prices, wartime income and other favourable economic factors, the farm mortgage debt of the country dropped from more than \$7,000,000,000 to about \$5,000,000,000. This decline was reflected in both land bank and land bank commissioner loans, which dropped from \$2,900.000,000 on Jan. 1, 1937, to \$1,200,000,000 on July 1, 1946. During the year ending June 30, 1946, 29,700 farmers obtained land bank and commissioner loans for approximately \$135,000,000, the highest in number and amount after 1936. However, borrowers repaid \$297,839,349 during the same period; that is, about \$2.21 was repaid for each dollar of new credit extended.

As a further result of these favourable factors, the number of farms owned by the federal land banks and the Federal Farm Mortgage corporation declined from 31,454 on Jan. 1, 1937, to 431 on July 1, 1946. Foreclosures in the U.S. by all lenders dropped from 20.5 per 1,000 farms mortgaged to 0.8 per 1,000 farms mortgaged in 1946.

The federal land banks based their loans on normal agricultural values. An amendment to the Federal Farm Loan act in 1945 permitted the federal land banks to loan up to 65% of the appraised normal value of the farm offered as security. Previously, land bank loans could not exceed 50% of the value of the land and 20% of the value of the permanent insured improvements. Land bank loans were limited to \$50,000 to any one borrower. Commissioner loans could be made up to 75% of the normal agricultural value of the property but might not exceed \$7,500 to any one borrower.

The years from 1937-46 witnessed a marked contrast in the purposes for which loans were made. Prior to and early in the period the great majority of loans were made to refinance indebtedness, while in the latter years credit was used to a much greater extent to buy land and equipment, to improve land and buildings and to meet other current

By an amendment to the act in 1937, farmers were given greater assistance in stabilizing their payments on land bank and land bank commissioner loans by means of conditional or future payments. A farmer could make a future payment on his loan, and these funds were held by the federal land bank and applied to future maturing loan instalments as directed by the borrower. Interest was paid by the bank on future payments at the same rate as that borne by the loan. On July 1, 1946, future payments totalling \$21,523,526 were held by the federal land banks and the Federal Farm Mortgage corporation.

In Feb. 1945, the federal land banks made the first public offering of consolidated bonds since 1936, and this and three subsequent offerings made prior to July 1, 1946, were heavily oversubscribed. Consolidated bonds outstanding on July 1, 1946, amounted to \$779,835,000 for which the federal land banks were jointly and severally liable. These bonds were not obligations of the government of the U.S.

Production Credit.-During the ten-year period, the 500odd production credit associations, operating since 1933, showed a continuous growth in membership, in reserves and in percentage of capital owned by farmer members. These associations were established to provide credit for farm production of crops and livestock.

During World War II, the associations geared their activities to finance increased demands for food. Loan volume went from \$286,577,842 in 1937, to \$500,000,000 or more for each of the four years prior to July 1, 1946. More than 390,000 farmers and ranchers were members of production credit associations on July 1, 1946. This compared with 242,616 on Jan. 1, 1937.

The goal of complete farmer ownership of the production credit system in the ten years came more clearly into sight. The capital of the associations when first organized in 1933 and 1934 was almost entirely supplied by the government through the 12 production credit corporations. However, each member was required to own stock equal to 5% of the amount of his loan. On Jan. 1, 1937, capital of the associations owned by farmer members amounted to \$10,778,693, or 11.9% of net worth, and that owned by production credit corporations amounted to \$74,824,150, or 82.3% of net worth. On July 1, 1946, the 390,000 members owned stock in the par amount of \$35,506,615. This investment, added to earnings of \$37,058,568 accumulated to July 1, 1946, represented 60.2% of the association's net worth as compared with 17.7% on Jan. 1, 1937.

As in all co-operatives, savings in production credit association operations after building up adequate reserves were returned to the members. The first production credit association dividends, however, were distributed in 1940, associations, while in a position to pay dividends, preferred to accumulate still larger reserves as a safeguard for less favourable times. During their early years most of the associations used part of the income from the investment of government capital supplied by the production credit corporations to pay operating expenses. As the system grew, other income

when eight associations made their initial distribution to

stockholders. This number increased to 34 in 1945. Many

or member income increased. In 1937, the aggregate member income exceeded combined expenses by \$685,862, but this compared with \$2,126,993 in 1945. Some associations unable to operate on member income were located in areas where the type of farming followed and other conditions were not conducive to profitable operation.

The production credit system in the ten years gave serious attention to its program of improving the quality of credit services provided by the associations and to adapting its facilities carefully to meet the sound credit requirements of individual farmers.

The budget loan, popularized by the production credit association, proved highly acceptable to farmers. Through its use farmers saved money and time. In the spring, a farmer would arrange for his credit for the coming season for both crop and livestock production and it would be advanced as he needed it, some when he bought feed and seed, and some later at harvest time. He would repay the loan when he sold the crops and livestock financed.

Losses on loans amounted to approximately one-eighth of 1% of the total amount of cash advanced.

Credit for Co-operatives.—The 13 banks for co-operatives, including the Central Bank for Co-operatives, extended credit to farmers' co-operative associations totalling more than a third of a billion dollars in each of the years 1943, 1944, 1945 and 1946, including the financing of Commodity Credit corporation loan documents. This compared with \$97,584,000 in 1937. This greater loan volume was largely the result of increased demands from co-operatives which were processing and marketing foodstuff and fibres needed during the war years.

From Jan. 1, 1937, to July 1, 1946, the 13 banks advanced \$2,337,503,434 in credit to co-operatives. These funds were used, among other purposes, for erecting and equipping buildings, for operating purposes and for effective merchandising.

During the period of high wartime income for farmers, farmers' co-operatives also were able to acquire a favourable financial position. Many co-operatives increased their capital and became debt free, occasioning a smaller need for credit.

In addition to extending credit to co-operatives, the banks for co-operatives also helped by counselling with and advising co-operatives to build strong capital structures, to retire indebtedness as rapidly as possible during favourable times, to be alert in effecting economies in their operations, to perfect their corporate structures in order to insure that farmer members would retain an active interest in and control of their associations and to seek every means whereby the business of farming might be made more profitable and secure.

The 13 banks for co-operatives also improved their financial position. Surplus earned and reserve for contingencies totalled \$36,085,836 on July 1, 1946, which compared with \$7,719,860 on Jan. 1, 1937. Capital stock owned by borrowing co-operatives increased from \$2,809,300 on Jan. 1, 1937, to \$6,482,000 on July 1, 1946. U.S. govern-

ment paid-in capital totalled \$178,500,000 on July 1, 1946. Federal Intermediate Credit Banks.—The 12 federal intermediate credit banks were the main source of loan funds for the production credit associations. More than 75% of the banks' loan volume comprised loans and discounts for the associations. The banks, however, dealt with approximately 600 financial and banking institutions and associations, including the production credit associations and banks for co-operatives, engaged in making short- and intermediate-term loans to farmers and stockmen and their co-operative associations. They also made some loans direct to farmers' co-operatives.

The 12 banks reached an all-time peak volume in loans and discounts of 5948,333,052 in 1944. This compared with \$405,870,342 in 1937. Funds to make these loans and discounts came largely from the sales of debentures in the investment market. Debentures of the credit banks continued to be regarded as prime securities by the investing public, and issues offered during the ten years were heavily oversubscribed. These debentures were not guaranteed, either as to principal or interest, by the federal government.

The banks in 1945–46 operated with paid-in capital of \$60,000,000 subscribed by the U.S. government. This compared with \$100,000,000 of government capital in the banks in 1937. Less capital was needed because the banks had built up substantial reserves for contingencies and earned surplus. On July 1, 1946, these funds totalled \$32,376,318, as compared with \$8,385,596 on Jan. 1, 1937.

Other Activities—Emergency crop loans outstanding on Jan. 1, 1937, totalled \$104,972,369, and \$105,344,816 on July 1, 1946; drought relief loans \$60,397,062 and \$31,888,495; loans from the Agricultural Marketing Act Revolving Fund \$53,754,384 and \$2,687,057; joint stock land bank loans \$135,353,728 and \$130,406; and regional agricultural credit corporation loans \$25,287,760 and \$3,809,530.

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Farm Income

See AGRICULTURE.

Farm Machinery

See AGRICULTURE.

Farm Mortgages

See AGRICULTURE; FARM CREDIT ADMINISTRATION.

Farm Purchase Loans

See FARM SECURITY ADMINISTRATION.

Farm Security Administration

Aid to small farmers through loans and individual guidance became a more permanent part of U.S. agricultural policy with the signing of the Farmers Home Administration act Aug. 14, 1946. This legislation provided basic authority for the program of supervised operating credit conducted by the U.S. department of agriculture on a year-to-year basis after 1937, and enlarged the farm ownership program created by the Bankhead-Jones act of 1937.



Workers' quarters at a Farm Security administration camp for migratory labourers in California, prior to the agricultural labour shortage created by World War II

The government program to assist low-income farmers had been considered temporary and experimental. While the Resettlement administration, an independent agency created in 1935, made small rehabilitation loans to needy farmers, most of its work was developing communities to resettle families farming poor land. The role of individual, on-farm guidance in helping low-income farmers improve their methods had not been fully perceived.

The Resettlement administration was transferred into the department of agriculture at the beginning of 1937, and nine months later became the Farm Security administration; resettlement activities were given a minor place, and greater attention was devoted to aiding the small farmer achieve success in his own locality. FSA was given responsibility for the 40-year farm purchase loans to tenants and sharecroppers under the new farm tenant act, and for water facilities loans in the west under the Pope-Jones act of 1937.

Every farmer who received a loan from FSA was offered assistance by field supervisors in developing and following sound farm and home management plans. Guidance became as important as credit.

When the United States entered World War II, FSA borrowers were able to make substantial contributions to U.S. food production. By 1945, the average farmer active in the rehabilitation program had raised his net worth from \$1,011 to \$2,745 and was operating 176 ac. compared with 111 previously.

Through June 1946, rehabilitation loans were made to about 893,000 families, ownership loans to 41,482 and water loans to 6,957. Repayments were good, and 5,129 long-term purchase loans were completely paid. More than 68,000 World War II veterans had applied for loans; operating credit had been extended to 17,700 of them, and 2,101 had been financed in buying farms.

FSA functions were transferred to the Farmers Home administration Nov. 1, 1946. This new agency of the department of agriculture was authorized to make short-term production and subsistence loans similar to the re-

habilitation loans developed by FSA; these included supervisory services. It was authorized to make 40-year loans for farm purchase, enlargement, development and improvement and to ensure 40-year loans by private lenders for the same purposes. Veterans had preference for the real estate loans and insured mortgages. (D. B. L.)

Farm Tenancy

See Agriculture.

Farouk I

King Farouk of Egypt (1920-), only son and eldest child of King Fuad I, was born at Cairo on Feb. 11, 1920, and succeeded his father on April 30, 1936. In 1935, as H.R.H. Prince Said, he was sent to England to complete his studies; while there he represented his country at the funeral of King George V. His father's death on April 28, 1936, prevented his proceeding to the Royal Military academy, Woolwich, and he returned to Egypt, where a regency council acted for him until his coming of age on July 29, 1937. On that day he was invested as king in the parliament building, Cairo. On Jan. 20, 1938, Farouk married Mlle. Farida Zulficar, daughter of a judge in Alexandria and granddaughter of a former prime minister. Three daughters were born, Princess Ferial on Nov. 17, 1938, Princess Fawzieh on April 7, 1940, and Princess Fadia on Dec. 15, 1943-all being given names beginning with "F," in accordance with a custom begun by King Farouk's father.

Fascism

Fascism is the name for a political philosophy which puts the nation-state or the race, its power and growth, in the centre of life and history. It disregards the individual and his rights, as well as humanity, in the exclusive interest of the nation-state. As a political technique it aims at the maintenance in power of a single party with which it identifies the state. Under its guidance the whole nation is strictly regimented politically, economically and culturally; its form of organization reminds one 'of an army with its stern insistence upon authority and discipline. In its foreign policy fascism extols the sacred egoism of the nation, disbelieves in international cooperation and in the desirability of peace, stresses military virtues and adheres to a strategy of swift and decisive action, scornful of humanitarian scruples, conciliation and compromise.

Fascism was first developed in Italy. Its leader, Benito Mussolini, though proclaiming fascism's unrelenting opposition to Russian communism, accepted many of the techniques and attitudes developed in totalitarian Russia, where one party had seized power, identified itself with the state and regimented the whole economic and intellectual life of the nation to an unprecedented degree. Originally fascism was regarded by Mussolini as an exclusively Italian movement, but in a speech delivered in Rome on Oct. 27, 1930, on the occasion of the eighth anniversary of the march on Rome, he declared: "By the year 1950, Italy will be the only country of young people in Europe, while the rest of Europe will be wrinkled and decrepit. From all the frontiers people will come to see the phenomenon of the blooming spring of the Italian people. . . . Today I affirm that the idea, doctrine and spirit of fascism are universal. It is Italian in its particular institutions, but it is universal in spirit, nor could it be otherwise, for spirit is universal by its very nature. It is therefore possible to see a fascist Europe which will model its institutions on fascist doctrine and practice, a Europe which will solve in the fascist way the problems of the modern state, a state very different from the states which existed before 1789, or which were formed afterward. Today even as yesterday the prestige of nations is determined absolutely by their military glories and armed power. Fascism is an army on the march."

Fascism became of international importance in Jan. 1933, when the German National Socialist Workers party, the principles of which resembled those of fascism, achieved power in Germany under the leadership of Adolf Hitler. Fascism thus gained the backing of the great industrial and military potentialities of Germany. Largely as the result of the ascendancy of fascism in Germany, similar tendencies made headway in Japan, Spain and in a number of smaller countries, so that in the 1930s fascism became a movement of international scope and importance. Among the fascist countries the leadership fell to Germany, Japan and Italy, which at the end of 1937 concluded a pact, ostensibly directed against the Communist international but aimed as much against "decaying" democracy with its "obsolete" and "inefficient" methods. With its great flexibility, expressed in ever-changing decisions of the leader-decisions never discussed but blindly obeyed and immediately executed by all the party members-fascism could present itself in a given situation as a bulwark of the social order against social revolution and Marxism, and in a different situation become the chief propaganda instrument and spearhead of a proletarian world revolution against "reactionaries" and capitalism.

The strength of fascism in the international scene was greatly increased by close co-operation between the leading fascist powers, sometimes regarded as the axis around

Adolf Hitler describing the occupation of Austria in March 1938 at a mass meeting in Munich. Banners about the hall repeated the nazi symbol "one folk, one realm, one leader"





Benito Mussolini addressing Italians at Trieste in 1938. With photographers, as with the populace, he preferred to be viewed heroically, on a balcony above the crowd

which world policy was to revolve. The co-operation of the totalitarian nations was not countered by a similar collaboration of the democracies; they continued to find fault each with the other and to fritter away the opportunities for timely defense in petty jealousies and distrust, instead of visualizing their common interests and their unity of way of life. Thus the world became safe for the aggression of the fascist powers. In spite of their affinity, the fascist powers were primarily influenced by their respective national interests; thus, fascist Germany in 1939 attacked semifascist Poland. which resisted heroically; in 1940 fascist Italy attacked Greece, which under its fascist leader, General John Metaxas, showed itself well prepared for the attack and united for its repulsion.

After 1938 the German form of fascism, known as national socialism (q.v.), became so predominant that it impressed its peculiar character upon all other (and even upon the older) forms of fascism. This was especially true of the acceptance of anti-Semitism by Italian and even Japanese fascism. Japan, with no Jewish population, practically had never had any Jewish problem. The number of Jews in Italy was insignificant; they had been completely assimilated into the national life and had participated prominently in all Italian national movements and wars. Many of them had belonged to the fascist party from the beginning, and for years had been members of Mussolini's inner circle. Official fascist sources had repeatedly declared anti-Semitism an absurdity. But in 1938 Italian fascism suddenly accepted the German racial theory, and quickly surpassed even German national socialism in its vilification of everything Jewish and in its designation of Judaism and Jewish conspiracies as the root of all evil and all troubles. This anti-Semitic trait became especially characteristic of the American form of fascism. The cultural pact concluded in Nov. 1938 between Germany and Italy was regarded as an effort at "training popular mentality along parallel lines in order to make the Italo-German association an instinctive national reaction."

The fascist countries began, after 1936, their ruthless

concentration of all resources of their nations upon vast military programs. By 1938 Germany and Japan could point to great successes. Germany had remilitarized the Rhineland and annexed Austria and the Czechoslovak Sudetenland; Japan had gained the control of central China and occupied Canton, after having successfully reorganized Manchuria as a puppet state and a centre of heavy industry and source of important raw material. Italy alone lagged behind, in spite of the fact that Mussolini had assured his audience at Milan on Oct. 25, 1932, of the coming world leadership of Italy. "Today, with a fully tranquil conscience I say to you, that the 20th century will be the century of fascism, the century of Italian power, the century during which Italy will become for the third time the leader of mankind." Italian help in Spain was unable to accelerate the victory of Spanish nationalist and fascist forces under General Franco over the governmental forces of the Spanish republic. At the end of 1938, Italy therefore raised a demand for a number of French possessions and proclaimed the inauguration of a new period of Italian expansion in the Mediterranean and in the Red Sea, aiming above all at the destruction of the British empire and the gain of the strategic position of Egypt.

The growing international prestige of fascism and the apparent weakening of the democratic front promoted the infiltration of fascist attitudes even into the democracies. Fascist propaganda was relentlessly active not only in Europe, but throughout the western hemisphere. People were induced to believe in the "breakdown" of capitalism and the inevitable upsurge of the "wave of the future." The German and Italian governments devoted special efforts to the organization of citizens of German and Italian descent in the European and American countries, and tried to teach them divided loyalties and even to put their loyalty to their racial origin above the loyalty to the country whose citizens they were. Fascist influence was relatively weak in Britain and strong in France. In the United States the great number of parties and presumptive leaders, and their division into Catholic and Protestant groups, prevented the formation of a strong fascist organization.

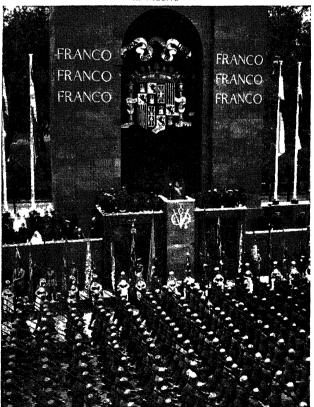
In May 1939 Italy and Germany concluded an outright defensive and offensive military alliance. Influential Japanese circles aimed, in the middle of 1939, at the extension of the military alliance to Japan. The Soviet-German agreement of Aug. 1939 changed the situation and forced a re-orientation in fascist propaganda. Propaganda against communism ceased entirely in Germany and other fascist countries; at the same time communists stopped their hostility to fascism and united with fascists in attacks against democracy, capitalism and "western imperialism." The element of nationalistic collectivism or communism, always contained in national socialism, was now stressed more than ever before. When in Sept. 1939 war broke out between Germany on the one hand and Britain and France on the other, Germany and Russia not only collaborated against Poland, but joined in the denunciation of France and Britain as imperialist plutocracies and regarded them as responsible for the war. Later, President Roosevelt was singled out by fascists and communists as a warmonger. Chancellor Hitler in his proclamation for the new year 1940 and the editorials in the German press called the war an "international revolution" destined to put an end to capitalistic society. The former violent attacks against the "international Jewish Marxist conspiracy" were now replaced by diatribes against "democratic imperialist warmongers" and against plots by "international bankers,"

The Russians were admitted with the Germans to the honour of "young and productive nations to whom belonged the future."

The anti-Comintern pact was replaced by an alliance among the three leading fascist powers concluded in Berlin on Sept. 27, 1940. In this pact, Germany, Italy and Japan united for the common struggle to establish a new world order. This new order, appearing as a great social and revolutionary force, would end the reactionary and conservative "pluto-democratic order." While Germany and Italy charged themselves primarily with the task of establishing the new order in Europe and Africa, and Japan with the task of establishing it in Asia, the new order was intended to become the universal order of mankind. The new pact denied any hostile intention against the soviet union; in fact it was followed by a pact of friendship and neutrality between Japan and the U.S.S.R. in April 1941. The pact of Sept. 1940 was aimed against the United States, upon which nation the violent attacks of fascism became more and more concentrated in 1941. On Oct. 23 of that year, the Stampa of Turin, one of Italy's best known newspapers, depicted Secretary Hull and President Roosevelt as "throbbing with rage as they use phrases from the ghetto from which the latter has descended."

The last international political success of fascism was gained in June 1940, when the defeat of France gave a reactionary and anti-British group under Marshal Pétain, Pierre Laval and Admiral Jean Darlan the chance of seizing power. Democracy in France was officially abolished, and the achievements of the liberal era since the French Revolution were abandoned and vilified. In their place a mixture of the old French pre-revolutionary order and an imitation of German-Italian fascist models was introduced. The fascists tried to prepare for the con-

Francisco Franco reviewing troops during a 1939 victory parade in Madrid



quest of the remaining democracies by spreading intellectual and moral confusion and by breaking or mollifying their will to timely and above all to concerted action. They tried to sow disunity and distrust among the democracies, fulminating against "British imperialism" in the United States, against "Yankee imperialism" in Latin America and warning the British of U.S.' "intention" of liquidating, and partly inheriting, the British empire. Depending upon the audiences for which it was destined. fascist propaganda raised doubts about democracy equally from the rightist as well as from the leftist point of view. The most refined technique of propaganda was coupled with a strategy of terror to produce the desired disintegration of the democracies. After the Spanish insurgent general, Emilio Mola, declared that the conquest of Madrid, which was then still in the hands of the Spanish Republican government and which was being attacked by four columns moving towards the city, would be helped by a "fifth column" of Franco sympathizers within the city, the expression became used frequently to designate the conscious and more often unconscious helpers of totalitarian penetration into the democracies.

The effort to broaden the base of the new order by the adhesion of other nations, although announced with great insistence in the fall of 1940, failed. Only three minor vassal states or protectorates of Germany-Slovakia, Hungary and Rumania-signed the pact. It became clear that the new order was not to be based upon the voluntary collaboration of free and equal peoples, but was to be strictly of a hierarchical nature with the German and the Japanese races dominating and guiding the weaker or so-called inferior races, which were to be disarmed and made economically subservient to the leading races. Rumania, which had been a semifascist country for several years, joined the ranks of fascism openly in the late fall of 1940, when the Iron Guard or the Legion of the Archangel Michael seized power and established a so-called legionary state which began its career by the assassination of a number of the leading conservative statesmen, generals, high officials and intellectuals of Rumania. In Norway at the end of Sept. 1940, Major Vidkun Quisling was imposed by the German forces of occupation as the ruler of Norway, and with the help of his minister of propaganda, Gudbrand Lunde, he quickly copied all the methods of national socialism. In July 1940 Prince Fumimaro Konove of Japan formed a government whose stated task was the building of a new national structure according to the fascist model in which the nation's total power would be regimented for the attainment of the domination of the far east. Under the influence of this fascist trend the Christian churches in Japan were expected to conform to Japan's nationalist and totalitarian ideals. A united party, the Imperial Rule Assistance association, was founded to accomplish the building of the new structure of Japanese life. It held its first three-day session in Tokyo in Dec. 1940, when the chairman of the meeting stressed the unity of Japan with Germany and Italy in the decisive battle between the new fascist order and the democratic way of life.

The heroic defense of Britain under Winston Churchill's leadership, when Britain stood entirely alone in a seemingly hopeless position, marked the turning point in the fortunes of fascism and in the vindication of democracy The Greek victories over the Italian army, the successful organization of China under Chiang Kai-shek, and the successful defense of Egypt and the Suez canal by British

imperial forces which defeated the Italian armies of Libya and Ethiopia, created an entirely new situation. Even the German victories against the Red army in the summer and fall of 1941 could not counteract the impression of the waning power of fascism; yet these successes of German arms which continued throughout 1942 on the eastern front, and the victory of the Japanese over U.S., British and Dutch forces in the far east in the first four months of 1942 seemed to keep the ultimate outcome in the balance. The final break started in the mother country of fascism. The 20th anniversary of the march on Rome and of fascism's coming to power in Italy was celebrated in Oct. 1942 in a very subdued mood. Fascism had always boasted of its superiority compared with "obsolete" and "decadent" democracy, of its higher efficiency and military invincibility. The events proved that fascism, in spite of its many years of preparation and its supreme efforts at total mobilization, was surpassed in the course of only a few years by the democracies, even in the art of warfare, which fascism acknowledged as its most proper domain.

On May 26, 1942, the fascist party directorate in Italy decided to remove all party members "found guilty of unethical conduct in the face of the war emergency." Many party members were dismissed for speculation, black

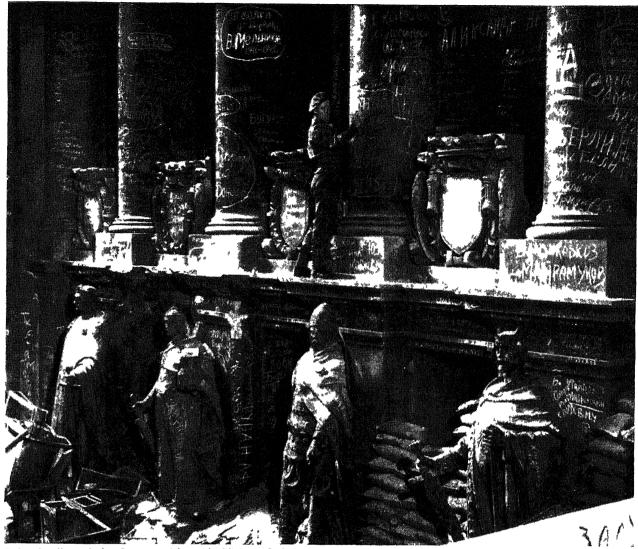
Survivors of the infamous Belsen concentration camp who were alive to greet troops of the British second army in April 1945.

This shows one of the buts for women and children

market operations and other dishonourable activities. The difficult and almost chaotic condition in which Italy found itself as a result of 20 years of fascist administration was made clear at the beginning of July 1943, when against widespread criticism and unrest Mussolini warned publicly that the Italians must not make scapegoats of the fascist bureaucracy and threatened the most draconic measures against all who would undermine fascist and Italian moiale. But only a few weeks later, on July 25, 1943, the king of Italy dismissed Benito Mussolini and appointed Marshal Pietro Badoglio as prime minister. On July 28 the dissolution of the fascist party was decreed, and the new government announced officially that "Italy has found it necessary to rid herself of a political system that she found harmful to the nation; this political system has been done away with. Fascism in Italy is over, forever." The end of fascism in Italy was welcomed by many Italians, and the new government promised a clean sweep of the Italian national life from all traces of the fascist regime.

The Germans, in occupying northern and central Italy, succeeded in rescuing Mussolini, who had been imprisoned by the Italian government. On Sept. 15, 1943, Mussolini again "assumed the supreme leadership of fascism in Italy." He appointed Alessandro Pavolini provisional secretary of the fascist national party, which was now renamed Republican fascist party, thus expressing the party's hostility to the king and the house of Savoy. In spite of its promises of far-reaching anticapitalistic measures, the





Defaced pillars of the German reichstag building in Berlin. A British soldier is shown chalking his name beneath those of Russians who preceded him

Republican fascist party was unable to win the majority of the Italian working class. Some of its foremost leaders were executed by their former fellow fascists. In Jan. 1944 Count Galeazzo Ciano, for many years foreign minister of Italy and son-in-law of Mussolini, and Marshal Emilio de Bono, one of the original four leaders in the march on Rome, were executed by fascist firing squads in Verona. The military events of the spring of 1945 put an end to the fascist regime in Italy. Benito Mussolini died in an ignominious way. But, after 20 years of demoralization and mental confusion, the seeds of fascism remained. In Italy in 1946 they were mainly represented by L'Uomo Qualunque (The Common Man) a newspaper and an organization founded by Guglielmo Giannini. Though he denied being a fascist, in an interview on Dec. 16, 1945, he used phrases which clearly reflected the general fascist line. He attacked all "professional politicians," including President Roosevelt, who he said, "fooled America for four successive terms." He promised that his movement, the movement of the common man, which, as he hoped, would "spread all over the world," would produce a sufficient number of administrators capable of running Italy. They would remain in office for 20 years and would find "the new word"-the new form of government. He

did not blame fascism or Italy or Germany for World War II but "a handful of a hundred politicians throughout the world." He wished to rid the world of these politicians whom he blamed for the death of his son killed in the war.

According to Giannini, Roosevelt was responsible for taking the United States into World War II, which otherwise would have ended in 1942, apparently with the victory of fascism.

In Germany and Japan the hold of fascism remained strong, even after the Russian victory over Germany at Stalingrad at the end of 1942 and the beginning of the great Russian counteroffensive. Japanese fascists under the leadership of Toyoma Nakano maintained that the Japanese emperor, as a descendant of the sun goddess, was destined to rule the earth as his ancestor ruled heaven, and that Japan could never rest until the whole of mankind became one household under the paternal sway of the Japanese emperor. In spite of this glorification and deification, the emperor had become a mere figurehead and the real power in fascist Japan in 1942 was in the hands of Prime Minister Hideki Tojo, who apparently wished to revive the days of the shogunate. The needs of the war were made an excuse for converting Japan into a oneparty fascist state. The Imperial Rule Assistance association, founded by Prince Fumimaro Konoye, became the

only political party in Japan with the prime minister as its leader.

While fascism remained strong in Germany and Japan, and also in Spain and Argentina, it was weakened by the victories of Russia and the democracies in all other European countries, especially in Rumania and Bulgaria, and in Hungary where in the last minute, with the Russians deep in Hungarian territory, the fascists under Major Ferenc Szálasi, for many years leader of the Arrow-Cross movement, seized power. Throughout Europe, in all countries which had come under fascist control, a general demoralization was noticeable. It showed itself partially in a widespread apathy and partly in the recourse to violence to which years of fascist brutalization and lawlessness had accustomed especially the youth of those countries. Antifascists were often animated by a bitter feeling of hatred against those who had supported the fascist regime. This bitterness almost assumed the proportions of civil war in many cases. After Germany's attack upon the U.S.S.R. in June 1941, members of the Communist parties in the various countries took a prominent part in the fight against Germany, proclaimed a new patriotism and in many cases became the backbone and the leaders of the antifascist resistance movement.

In Spain the fortunes of war led to less open emphasis on the fascist character of the government, but the falange and its ideology continued to dominate the political and social manifestations of life. The falange and the leading group in Spain dreamed of restoring the old Spanish empire in its greatest expansion, including even Cuba and Puerto Rico, Texas and California, Panamá and the Philippines. Like their counterparts in Germany and Spain, the militarists in control of Argentina began to dream of Argentina's expansion, a lebensraum which would include the mineral wealth and the Pacific coast of Chile, and the neighbouring lands of Paraguay, Bolivia, Uruguay and the southern provinces of Brazil. Such a state would be in a strategic position and economically strong enough to claim the leadership of all Latin America and to oppose its policy to that of the United States in deciding the fate of the western hemisphere. The Argentine government proceeded step by step to follow the example set by other totalitarian countries in winning over the masses by socialist promises, and in kindling national pride by inflaming the imagination with alleged "imperialist" and "reactionary" threats to Argentine sovereignty and security. On Nov. 17, 1944, vice-president and minister of war Colonel Juan Perón decreed the "organic law of the army," introducing the duty of all male and female Argentinians from 12 years of age onward to prepare for the defense of their fatherland. All males became subject to pre-conscription training from 12 to 20, and then for 30 years to military duties. Girls were to be prepared from the age of 12 for various women's auxiliary services. In the spring of 1946 Perón was elected president of the Argentine republic. He represented the Argentine labour party and was elected largely through the support of the masses, to whom he promised far-reaching social reforms and the fight against capitalism, especially against North American plutocracy.

Fascist influence underwent a definite eclipse in South Africa. The Ossewa-Brandag, or "Covered-Wagon Sentinels," an extremist Boer organization which was violently anti-British and pro-fascist, was curbed. Similar Boer groups, which had opposed South African participation in the war and were violently hostile to Britain, united into

one party under Dr. D. F. Malan for the elections of July 1943, but suffered "the most spectacular deteat in the history of South Africa" when the democratic parties under the leadership of Field Marshal Jan Christiaan Smuts gained a majority of 64 seats as against only 13 voices with which Smuts had carried his declaration of war against Germany in Sept. 1939. This defeat of the anti-British party in South Africa, perhaps the strongest and most effective fascist party in any democracy, confirmed the general trend away from fascism which predominated in the world after 1942, and to which only the governments in Spain and Argentina formed, in 1946, an exception.

The victory of the United Nations in 1945 ended the grip of fascism over Germany. Adolf Hitler and Josef Goebbels disappeared amid the ruins of Berlin in the catastrophe of a Germany which they had hoped to make the most powerful nation on earth and which they succeeded in destroying completely. Prominent fascist leaders were tried as war criminals in Germany and many other countries, and a number of them were executed. The fascist governments in Rumania, Bulgaria and Hungary gave way to governments in which communist forces asserted leadership. Democratic governments were established in Austria and in Italy. Germany did not survive defeat as an organized nation. (See also Anti-Semitism; CIVIL LIBERTIES; COMMUNISM; DEMOCRACY; GERMANY; ITALY; JAPAN; NATIONAL SOCIALISM; PHILOSOPHY; RUMANIA; SPAIN.)

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Fashions, Women's

In describing any phase of life in the eventful decade 1937–46, it is necessary to note that this was a most abnormal period, with all its trends sharply influenced or directly traceable to the cataclysmic war which occupied some six years of the ten. The fashion phase proved no exception. Paris, long the source of inspiration, disappeared into the nazi darkness along with the rest of Europe. London had to give its entire attention to the blockade, the blitz, the buzz bomb, not to the hang of a woman's skirt. Only the United States couturier could function with any degree of normality, and even there restrictions on fabric as well as radical changes in the feminine way of life put considerable restraint on the imaginative designer.

Silhouettes.—Silhouettes showed no remarkable variations from 1937 until 1945. The natural kind of line which prevailed just before World War II—following fairly faithfully the contours of the human figure, with the waist pretty much where it should be and without the padded, exaggeratedly wide shoulders so popular before 1937—continued to prevail until well after V-E day. Regulation L85, limiting yardage in U.S. women's clothes, had a great deal of influence in this respect. Then, in 1945 out of renascent Paris, there emerged a complete new trend toward roundness. Shoulders and sleeves were padded to curve outward in big arcs, waists tightened to curve in.

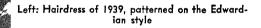


Above: The strapless gown for formal evening wear was introduced in 1938. This black lace gown was designed by Chanel

Below: The military motif—a gold eagle embroidered on a corduroy suit designed by Hattie Carnegie.



Above: Indian feather hat designed by Sally Victor and inspired by a revival of interest among American designers in U.S. history



Below: Molyneux's peasant dirndl suit of 1938





hips belled out by much padding and pleating. By the end of 1946, however, this roundness was already in its decline, the shape of things to come still in a state of flux.

Hemlines on silhouettes were a bit more active during 1937-46. They crept up slightly on daytime dresses in 1940; the U.S. had just taken over most of the world's designing, and U.S. women still liked to show off their famous legs. Then in 1941 came a real innovation. The autumn collections produced, and the public finally accepted, the ballet-length evening dress. Six or eight or even ten inches above the floor, these put a new emphasis on foot and shoe. The next hemline change came after the close of the war in the spring of 1946, with a whole crop of uneven hemlines, some dipped low in back, some jagged, some slanted low at one side.

Suits came close to establishing themselves as the number one fashion of the decade, because of the war. What was formerly a costume for tailored days in town or a country sojourn became a uniform for 24 hours a day, 7 days a week, everywhere. Women in defense jobs or campfollowing their husbands around the country found one suit worth a half-dozen dresses-as right at a Texas airfield as on the sidewalks of New York, and infinitely variable by means of blouses and jerseys. The suit itself took to many forms and fabrics. Jackets were classic cuts, or boleros, basques, box shapes, lumberjackets, snappy brassbuttoned bellhop tops. Skirts were knife-straight, flyfronted, trouser-pleated, or fulled slightly in front. And gray flannel had a particular heyday. Only with the war's end and the consequent reaction against all things that smacked even remotely of the sensible, did women tire of suits. The winter of 1946 brought full-length coats worn over wool dresses as a replacement for suits, but it would be a long time before suits relinquished the prominent place in the wardrobe that they gained during the decade. They were winning back lost popularity with cutaways and tunic-type jackets that reached almost to the middle of the thigh.

Coats were strongly influenced in shape by the demand for suits. And the shape for fur and cloth alike was big, roomy, often chunky. The Chesterfield, a boxy full-length coat with a small velvet collar, had a long vogue. So did the fingertip-length coat, cut loose and swingy to contrast with a sheath dress or absorb a bulky suit. So did the Canadienne, the French translation of the Canadian soldier's belted three-quarter coat. Minor flurries of trench coats, greatcoats and pea jackets were observed; and in 1943, the square-cut fur-lined wool coat arrived importantly in many different lengths. In 1946, however, the important trend was toward redingotes and reefers, coats that went slickly over the feminine dresses which had become the fashion.

Dresses, after succumbing to the influence of the Austrian dirndl for a while, began early to become slim, tubular, reedy. Cut straight, cinched in at the waist by belt and not by fit, they made a maximum of a minimum of cloth. Gradually, high round "jewel" necklines changed to turtlenecks and scooped-out ovals, and sleeves shortened into ledges or little caps or disappeared completely into shoulder straps and halters. Dresses of this latter bare-topped variety usually came equipped with boleros and jackets, turning them into modest suits for the office, restaurant or theatre. With the introduction of the rounded-out line in 1945, however, all this changed. Dresses featured swelling curves; dolman sleeves became the rule, as did big Peter Pan collars or tiny-collared, round-yoked

tops. Two fabrics used prominently in dresses were silk jersey, introduced in 1937, and cotton, which was given the same elegant treatment as silk during the war and was worn night and day.

"Separates," something new and characteristically U.S. in fashion, often substituted for dresses. These were outfits of several pieces—skirt, jacket, shirt, halter, long skirt—which could be combined and varied in numberless ways, making costumes for any and every occasion.

Evening Clothes completed a cycle during the decade. The prewar period saw dresses at their most romantic and opulent, made of many yards of rich fabric, copied from Winterhalter paintings or the Spanish masters, swung out -for a brief vogue-by hoops. With the first signs of war, however, they entered another stage. Slim and straight of line, some had covered shoulders or pailletted jackets, others were shirtwaist tops above simple skirts. Wool was often used in dinner dresses, decidedly new and a definite necessity in heatless houses. Then, with the decrease of lavish parties and the restricted use of taxis and private cars, the floor-length dress disappeared almost completely. The new ballet-length dress and street-length ones of charming cut and cloth took its place. Covered up at first, these gradually assumed full décolletage; a short slipper satin dress held up by thin shoulder straps, a short black crepe skirt topped by a sequinned halter. War's end saw the end of the cycle. The first long evening dresses to appear were simple black velvet pinafores. Later came sumptuous creations of satin and brocade, stiff with beads and embroidery, boned and padded. The elaborate short dress continued, however, as a favourite for "little" evenings.

Play Clothes grew into a bigger fashion category each year of the decade, with one important trend crowding out another. It began with gray flannel man-tailored slacks—the duchess of Marlborough had bought the first from a gentleman's tailor. The next year, 1938, saw the bare midriff play dress come into being; considered daring then, it became the accepted and attractive silhouette for beach and country. Other big successes included frontier pants, dirndls, pinafores, denim shorts and skirts and jeans, leotards (to wear under skirts) and cholo coats (to wear over swim suits). Bathing suits slimmed down from the ballerina type of 1938 to the skin-tight panungs of 1945 and 1946 (based on the loincloths of the South seas), and embraced every cloth from gingham to wool gabardine.

Shoes staged their own revolution between 1937 and 1946. Women, while appreciating and envying the comfort of low-heeled shoes, had always resented their heavy "sensible" look. Then suddenly, inspired by the success of espadrilles and peasant sandals and the growing popularity of suits, flats (for so they came to be known) began to put on new airs. They acquired a light-footed look, a cut and crafting every bit as pretty as the kind given to spikeheeled pumps. They were soft suede slippers, little leather sling-backs, ankle-high boots, and ballet slippers of all colours and materials. (The latter, in 1945, became a real craze.) Wedge shoes also grew into an important fashion during the decade. So did the ankle-strap shoe, when short and ballet-length evening dresses threw the emphasis on ankles. As for other high-heeled shoes, these continued to feature cut-out toes and heels until 1946, when the closed pump had a renascence.

Hats swung with the pendulum of the times. Crazy and frivolous before 1939, covered with flowers and wearing coquettish veils, they quieted down when war came. Snug-crowned felts, skullcaps and cloches came into being to accompany the ever-present suits. Hoods, which the



Upper left: Beach wear in 1945 included the cholo, a loose-fitting coat patterned after the Peruvian shirt
Upper right: The shoulder bag returned to favour in 1942
Centre: Evening wear in 1946 featured the French décolletage
Lower left: The redingote, a 1946 fashion note in street wear
Above: Belted skirts and jerseys: popular youthful fashion of 1945

1938 ski rage had made into a big millinery fashion, grew more popular than ever, being warm and adaptable to the current neat-headed coiffures. Then, in conformity with the rounded-out line which came from Paris' first postwar collections, big swooping rollers, huge globes of felt and lush *Directoire* bonnets became the style. The trend continued "pretty," with a sprinkling of rakish berets and visored caps.

Hairdos had their ups and downs, according to the fashions which were prevalent. The decade saw: the long mane (1937), the page-boy (1938), the George Washington coif (1938), the feathercut or shortcut (1939), the chignon (1943), the upswept hairdo and the Psyche knot (1946), and a shorter, neater caplike head of hair (1946). Many of these persisted. In 1946, Paris was dictating a trend toward more elaborate coiffures, involving false hair, false chignons and false braids.

Accessories grew to great importance during the decade. The slickly simple fashions which were characteristic of the U.S. wartime couture depended to a large extent on what went with them—a yellow scarf muffling the throat of a gray flannel dress or knotted round its waist, a ponyskin bag enlivening a black greatcoat, a wide band of brass-studded leather pulling together a plain gray flannel shirt and skirt. Belts had tremendous popularity; they came in many different shapes and leathers, and were usually plastered with brass ornaments. The over-the-shoulder handbag also made fashion history right after the start of the war; good with suits, it left the hands free to do other jobs. String gloves, cotton or wool, short and gay-coloured, were another strong fashion.

The over-all picture showed two important happenings during the decade. First, the emergence of a strongly individual U.S. design, forced to maturity by the war, one which produced a whole U.S. kind of look, and was managed most successfully to meet both the demands of mass production and individual taste. Second, the emergence of important new fashion markets. It was evident in Paris that the U.S. was no longer the catered-to customer. South Americans and Italians were among the groups which had the money and mode of life and the interest and inclination to be patrons of fashion's art. (See also Furs.)

(C. SN.)

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Fats, Animal

See VEGETABLE OILS AND ANIMAL FATS.

FBI

See FEDERAL BUREAU OF INVESTIGATION.

FCA

See FARM CREDIT ADMINISTRATION.

FCC

See FEDERAL COMMUNICATIONS COMMISSION.

FDIC

See Federal Deposit Insurance Corporation.

FEA (Foreign Economic Administration)

See WAR AND DEFENSE AGENCIES.

Federal Bureau of Investigation

By the end of the 1937 fiscal year most of the U.S. gangster barons who ruled in the earlier '30s had been incarcerated. Their reign of terror was broken.

Of major importance in the work of the Federal Bureau of Investigation during that year was the smashing of several large and well-organized white slave traffic rings throughout the U.S. The FBI National academy had graduated a total of 115 officers representing 45 states and 1 territorial possession. During the fiscal year the FBI laboratory conducted 6,644 examinations of evidence. In 897 of these examinations assistance was rendered to other branches of the federal government as well as to state, county and municipal law enforcement agencies. The identification division of the FBI had 7,360,458 sets of fingerprints on record. During the year, 487,621 identifications were made and 6,223 fugitives were located through fingerprints.

There were 4,624 convictions recorded for the year. These resulted in 2 death sentences, 12 life sentences and 13,345 years, 7 months and 29 days, and fines amounting to \$648,359.80. Recoveries effected in cases investigated by the FBI amounted to \$4,905,459.40. There were 2,635 motor vehicles recovered during the year having a value of \$1,157,947.81. Savings realized, fines imposed and recoveries effected in cases investigated by the FBI during the fiscal year reached a total of \$41,438,370.22.

Among the cases occurring in the 1938 fiscal year were several of outstanding interest. A confidence man who used 79 different names and cashed 317 checks totalling \$12,798.29 in 35 states was indicted, prosecuted and sentenced to serve a term exceeding 14 years.

Another man, obsessed with the desire of colonizing a South sea island, attempted to carry out his plans. After engaging a boat under the guise of wanting to take a short cruise, he set out for the South seas, forcing the seven members of his party to act as the crew under the persuasion of a .45 calibre automatic pistol. His plan failed when he was killed and his body was thrown overboard by the crew. In Kansas City 242 persons were convicted for election frauds. For the 1938 fiscal year there were 5,420 convictions resulting in 3 death sentences, 13 life sentences and 16,604 years, 3 months and 6 days. Fines, savings and recoveries amounted to \$47,568,419.53.

By 1938 crime was not the only field of activity engaging the attention of the FBI. Investigation disclosed extensive and widespread activities directed by agents of a foreign government. It was determined that these agents were actually engaged in securing secret information pertaining to the U.S. military and naval forces for delivery to a foreign power. As a result of this investigation four espionage agents were apprehended, prosecuted and convicted.

The fiscal year 1939 brought with it a great increase in investigative work in espionage and related fields. There were 1,651 new cases investigated as compared with 250 cases during the previous fiscal year. Exclusive jurisdiction over this type of case was given to the Federal Bureau of Investigation by presidential directive. While prosecutions in this field were relatively few at this time, a tremendous amount of investigative time was devoted to ascertaining the identity, movements, operations and contacts of persons allegedly engaged in espionage activity. At the same time numerous and extensive investigations were conducted in cases of alleged sabotage in connection with the manufacture of war materials, munitions and supplies.

This same fiscal year saw a number of notable cases in

the criminal field reach their logical conclusion. One of the most notorious criminals in the U.S. was taken into custody in New York city. This man and his associate were believed to have been interested in the operation of dog tracks and slot machines throughout the country. They were also said to have been the New York contacts for the notorious Barker-Karpis gang, the kidnappers of Edward George Bremer, and for Verne Miller and his associates. Miller, together with Charles "Pretty Boy" Floyd and Adam Richetti, perpetrated the infamous Kansas City massacre. The main sources of revenue, however, for this criminal and his associate were the so-called rackets operated in New York city, which under their management threatened to become a permanent parasite on industry. Through their own organization of strong-arm men and gunmen, which was believed to number from 200 to 500, they collected millions of dollars from legitimate businessmen in the city of New York.

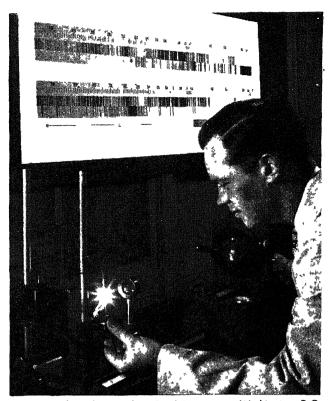
The last remaining member of what could well be called one of the most notorious and successful gangs of bank robbers of all time, was sentenced to an additional five years, making his total sentences 26 years. A vicious killer who in May 1946, killed at least one and wounded 13 other guards in an abortive attempt to break out of Alcatraz prison, was arrested by special agents of the FBI in Chicago, Ill. For the first time since the judicial system was set up in the federal government, an appellate judge was charged with selling his office to those who came before him seeking justice. On April 26, 1939, a federal grand jury in New York returned an indictment against a former judge of the circuit court of appeals. The investigation of this case led to the first conviction of a federal appellate judge in U.S. history.

During the 1939 fiscal year the use of microchemical techniques was applied in the FBI laboratory to the analysis of evidence. These techniques served both to check and supplement spectrographic analysis in that once the qualitative determination was made spectrographically, a quantitative analysis could be performed microchemically. In the field of blood chemistry notable strides were made in building up standard sera supplies. The collection of ready-prepared sera for criminological purposes was the most extensive in the world. During the year 5,559 scientific examinations were conducted in the laboratory involving 39,037 specimens of evidence.

For the fiscal year ending June 30,1939, there were 5,162 convictions in cases handled by the FBI with 12 life sentences and 16,948 years, 6 months and 5 days being imposed. The total savings, fines and recoveries for the fiscal year amounted to \$16,876,717.99.

Internal Security of the U.S.-By this time it was recognized that investigations relating to national defense matters should be conducted in a comprehensive and effective manner on a national basis, and all information should be carefully sifted out and correlated in order to avoid confusion and lack of responsibility. The president of the U.S. in a directive dated Sept. 6, 1939, designating the FBI as the clearinghouse and co-ordinating agency for all matters bearing on our internal security, stated in part: "To this end I request all police officers, sheriffs and all other law enforcement officers in the United States to promptly turn over to the nearest representative of the Federal Bureau of Investigation any information obtained by them relating to espionage, counterespionage, sabotage, subversive activities and violations of the neutrality laws." The response of all law enforcement to the chief executive's request was enthusiastic throughout the nation.

At the request of the war and navy departments, a sur-



Spectrograph analysis in the F.B.I. laboratory at Washington, D.C. Precision instruments and special cameras are among the means used by technicians to record macroscopic and microscopic evidence for court use

vey of the protective facilities of manufacturing establishments having large contracts to provide the government of the U.S. with defense materials was inaugurated by the FBI. In all a total of more than 2,300 such plants were surveyed under this program and recommendations were made to plant officials designed to maintain a maximum of protection.

The citizens of the country by 1940 were becoming more and more aware of the effects of the European conflict upon the nation. An air of tension began to manifest itself in the everyday business life. The day-to-day gossip increasingly included discussions of the progress of the axis powers. Incidents that a year previously meant little took on an added significance. During May of 1940, in one day the FBI received 2,871 complaints. From July 1, 1939, to June 30, 1940, a total of 16,883 national defense matters were received which required investigative activity.

As a result of the 58 convictions in national defense matters during the 1940 fiscal year, sentences totalling more than 65 years were meted out and fines of \$329,860 were levied by the courts. In addition, there were 5,605 convictions in general criminal matters coming within the jurisdiction of the FBI. These resulted in sentences exceeding 17,833 years and 10 life sentences. The total fines, savings and recoveries in these latter cases amounted to \$58,390,180.64. There were 2,393 federal fugitives from justice located and apprehended during the year, while 7,809 fugitives were located for state, county and municipal law enforcement agencies by searching for their finger-prints through the files of the identification division.

The acceleration of the national preparedness program and the ever-increasing recognition of the need to render full protection against subversive activities now began to

tax the facilities and personnel of the FBI to the utmost. During the fiscal year 1941, a total of 68,368 national defense cases were received. In addition 20,305 Selective Training and Service act cases were pending investigation. In this fiscal year there were 412 convictions in national defense cases. Moreover, numerous persons were expelled from the country as a result of information developed by the FBI. The criminal matters coming within the investigative jurisdiction of the FBI continued to demand close attention. For this fiscal year investigative activity in all fields resulted in 6,182 convictions with sentences of over 16,646 years and 5 life sentences.

In the early part of 1941, the FBI Law Enforcement Officers' Mobilization Plan for National Defense was established to afford instruction in the particular investigative problems arising out of espionage, sabotage and similar matters. Through the medium of quarterly conferences held throughout the U.S., Hawaii, Alaska and Puerto Rico, representatives of co-operating law enforcement agencies were kept apprised of the developments in their respective communities. As a result of these conferences, procedures were developed whereby the energies and facilities of every agency were fully mobilized for defense of the home front. This co-ordination served to avoid the confusion prevalent during World War I, when many government and private groups acted independently and often unwisely in the national defense field.

As a further aid in protecting U.S. defense industries, a confidential booklet was prepared by the FBI incorporating the basic principles of protection against espionage and sabotage. This was distributed to plant officials, law enforcement officers, public utilities, railroads, air lines and steamship companies. Representatives of the FBI were sent to England to study police duties and internal security matters under actual wartime conditions. The benefit of the knowledge thus obtained was given to special agents of the FBI and to police officers throughout the nation for their assistance in adequately and properly performing their duties incident to the emergency.

On Feb. 25, 1941, a foreign agent was taken into custody for violation of the Registration act. This man, a very active participant in many German societies in the U.S., recruited German nationals in the U.S. who were skilled mechanics and technicians for the purpose of having them return to Germany to work in plants producing defense articles and war materials.

Two German and 28 Italian vessels became interned in United States ports after the outbreak of hostilities in Europe between the United Kingdom and Germany and Italy and as a result of the British naval blockade. In March 1941, after learning that acts of sabotage had been committed on most of these vessels, their crews were removed and made subjects of deportation warrants. Investigation by the FBI revealed that the engines, turbines, boilers and other machinery of all of the vessels except two had been badly damaged by crew members, and prosecution was instituted against the masters of the vessels and the participating crew members.

In anticipation of coming events and to meet the everincreasing obligations it was called upon to assume, FBI personnel was increased almost twofold. It was realized that in the event of war the FBI must have an organization which would function smoothly and that each employee must be able to step into his or her place immediately so valuable time would not be lost. The entire training program for both special agents and all other employees was geared to accomplish this purpose.

Pearl Harbor and After.—The attack on Pearl Harbor on Dec. 7, 1941, therefore found the FBI completely mobilized on a wartime basis, and it went into action at once to safeguard the nation against internal trouble from U.S. enemies. Immediately after word of the bombing of Pearl Harbor was received, the entire service of the FBI was put on a 24-hour basis, all annual leave was cancelled, and within an hour every employee was at his post of duty ready and able to put into practice the thorough training he had received.

Protective guards were established at the Japanese embassy and all Japanese consulates throughout the country. The same action was taken in connection with the German and Italian embassies and consulates upon the declaration of war against these countries. Appropriate steps were taken to protect all commercial air lines from sabotage by any air traveller or through any air express package. All industrial concerns having war contracts were immediately instructed by representatives of the FBI to be on the alert for any acts of espionage or sabotage or interference with the production of war materials. Instructions were issued to stop all press services to the countries with which the U.S. was at war. All overseas telephone communications into or out of the U.S. were stopped and the departure of any axis national from the country was prevented. Prior to the outbreak of war all enemy aliens who were considered dangerous to the internal security of the country in the event of war had been catalogued by the FBI and their custodial detention recommended to the attorney general. Concurrently with the declaration of war against Japan, Germany and Italy, the enemy aliens of these nationalities who were considered dangerous to national security were taken into custody.

From July 1, 1941, to June 30, 1942, 218,734 national security matters were reported to the FBI for investigation. The principal objective in these inquiries was the prevention of espionage and sabotage or any other activity which might endanger or impair the war effort. While prosecutions in federal courts during the fiscal year ending June 30, 1942, resulted in 1,473 convictions for violations of national defense statutes, these were not the measure of effective intelligence work. From the inception of the emergency the FBI followed the policy of ascertaining the identities of axis agents within the country, their sources of information and methods of communication. Thus it was possible in many instances to gain control of their sources of information and communication methods completely and by so doing to immobilize groups of foreign agents.

For the 1942 fiscal year convictions in FBI investigations in all categories totalled 7,448 with sentences imposed of 1 death, 8 life, 17,163 years, 6 months and 4 days. There were 3,827 federal fugitives located and apprehended and 7,506 fugitives were located for state, county and municipal law enforcement agencies through fingerprint records in the FBI identification division. Fines, savings and recoveries totalled \$17,732,881.45.

Close co-operation and a free interchange of information pertaining to national security were maintained between the military and naval intelligence services and the FBI. Weekly conferences between the officials in charge of these three services resulted in the close co-ordination of all endeavours. In addition, weekly conferences were held by the field representatives of these agencies throughout the U.S. to unify all efforts.

Private citizens individually and through patriotic organizations also co-operated. There were no vigilante

groups such as existed in World War I. By public education, hysteria and gossip were held to a minimum. City, county and state law enforcement officers rendered meritorious service by being constantly alert to recognize and to assist in the handling of any matter inimical to the welfare of the nation.

This fiscal year also witnessed the sentencing of the members of two of the largest German espionage rings operating in the U.S. On Jan. 2, 1942, the members of the Frederick Joubert Duquesne spy ring were sentenced to a total of 320 years' imprisonment and fines of \$18,000. On March 13 and March 20, 1942, Kurt Frederick Ludwig and eight of his cohorts were sentenced to a total of 132 years in prison. Ludwig, born in the state of Ohio, travelled over much of the U.S. securing information concerning the movement of ships, the construction of aircraft, the identity, location and number of troops in various garrisons of the U.S. army and other information pertaining to U.S. defense activities for his German principals. In the general criminal field in addition to hundreds of other cases investigated, one of the most elusive, ruthless and dangerous outlaws ever sought by the FBI was killed while resisting arrest by federal, state and local officers.

Highlighting the national defense activities of the fiscal year 1943 which began on July 1, 1942, was the culmination of the case involving eight submarine-landed German saboteurs. By an executive order of the president of the U.S., the eight saboteurs were tried before a military commission composed of seven U.S. army officers appointed by the president. On Aug. 8, 1942, six were sentenced to death, one to life imprisonment and one to 30 years' imprisonment.

The landing of these men was the first outward manifestation of the intention of the German high command to engage in sabotage activities in the U.S. Within two weeks after their landing they were taken into custody by special agents of the FBI. Thoroughly trained by the high command of the German army in the most modern methods of destruction, the saboteurs were sent to the U.S. for the specific purpose of interfering with the war effort, with particular emphasis being placed on interrupting production at aluminum and magnesium plants. Each man had been born in Germany but at one time or another had spent a part of his life in the U.S., during which time he had learned the English language and acquainted himself with U.S. customs. To carry out their mission they brought with them four waterproof cases containing large quantities of high explosives, bombs which were designed to look like large pieces of coal, a considerable number of different types of fuses, detonators and primers, as well as mechanical and chemical timing devices. It was estimated that the explosives and other equipment furnished these men when utilized in connection with their training in preparing additional explosives and incendiary material would last the saboteurs two years. At the time they were apprehended by the FBI, \$174,588.62 of their funds was seized. In addition to this equipment and money the saboteurs were furnished with forged Selective Training and Service act registration cards, and social security cards made out in the names of the aliases they expected to use.

Max Stephan, born in Germany, and a naturalized citizen of the U.S., was found guilty of the crime of treason and on Nov. 13, 1942, was sentenced to hang. Later this sentence was commuted to life imprisonment.

A summary of the accomplishments for the fiscal year ending June 30, 1943, reflected 10,294 convictions with sentences totalling 24,624 years, 3 months and 6 days, 3

life and 7 death sentences. There were 8,367 fugitives identified and located by special agents of the FBI. A total of 11,976 fugitives were located for state, county and municipal law enforcement agencies through the facilities of the FBI identification division.

Although the year 1944 brought with it a great turn in the tide of battle, the FBI's internal security program continued to be pursued with undiminished relentlessness to prevent any last minute sabotage efforts on the part of the axis. Espionage efforts were also rendered ineffective

On Sept. 28, 1943, in New York city, two men received prison terms of 30 years each on charges of conspiring to violate the espionage statutes. The activities of these individuals came to light when letters written by one of them and mailed to "mail drops" known to be used by German espionage agents operating in the U.S. were intercepted. The letters were typewritten in English; however, the reverse side of each letter contained secret messages handprinted in the German language. The information in these secret messages would have been of great value to the axis since they were concerned with ship, convoy and troop movements in the New York area and the German submarine campaign in the Atlantic was extremely active at that time.

In Detroit, Mich., a ring of German espionage agents was arrested and prosecuted. On March 16 and March 20, 1944, sentences ranging from 5 to 20 years were imposed upon the defendants in this case. These agents were expected to obtain data in the U.S. on the location of munition factories, their production and personnel; location, number and type of aircraft factories; location of military camps and naval bases, and number of personnel stationed at these camps and bases; completion and departure dates of convoys; dates and destination of troop movements; information on medical supplies for export; new discoveries which might influence the progress of the war and information on helium. The leader of the ring was not permitted to make any notes by her German instructors but was required to commit to memory the matters desired by her principals.

Three Japanese women citizens of the U.S. were sentenced to prison terms in Denver, Colo., on Aug. 11, 1944, on charges of conspiracy to commit treason by giving aid to German prisoners of war.

As was the case during the entire wartime period, investigations pertaining directly to the security program received primary consideration, yet at the same time full and continuous attention was afforded the criminal violations coming within the jurisdiction of the FBI. In this field during this fiscal period certain crimes, particularly those aggravated by wartime conditions, reflected a sharp increase with some indications of a return to gangsterism. In New York city five men bound and gagged two truck drivers and hijacked whisky and trucks worth \$100,000. All five were arrested by special agents of the FBI. Prosecution resulted in substantial sentences being meted out to each man. In Monticello, N.Y., a man commonly referred to as the "trigger man" for the infamous organization known as "Murder, Incorporated," was sentenced to serve from 25 years to life at hard labour. Widespread investigation looking toward his apprehension had been conducted over a period of several years throughout the U.S. There were 13,616 convictions with sentences of 33,615 years, 2 months and 11 days and 4 life sentences recorded in the 1944 fiscal year. Fourteen thousand, six

hundred ninety-five federal fugitives were located and 13,729 fugitives were located for county, state and municipal law enforcement agencies when their fingerprints were searched through the files of the FBI identification division. Fines, savings and recoveries amounted to \$21,490,203.91.

The 1945 fiscal year brought with it a final attempt on the part of the German intelligence service to secure information in the U.S. through an espionage mission. On Dec. 3, 1944, a ship exploded off the coast of Maine. Since the explosion could have been the result of submarine activity in this vicinity, a very thorough inquiry was instituted by the FBI on the possibility that axis agents might have been landed by the same submarine. Numerous residents in the vicinity were interrogated by special agents. Two of the persons questioned on Dec. 4, 1944, advised that they had seen two strangers in the vicinity on the evening of Nov. 29, 1944. These two strangers proved to be espionage agents who had been landed by submarine on an espionage mission for the German intelligence service. Both were apprehended and were sentenced to death; subsequently, this sentence was commuted to life imprisonment. During this fiscal period 500 cases coming within the purview of the sedition statute were received and investigated, 3,081 suspected acts of sabotage were reported, 5,090 Selective Training and Service act fugitives were taken into custody, and 1,607 escaped prisoners of war were reported to the FBI.

Rise in All Types of Major Crime.—Meanwhile the criminal incidents in the U.S. continued on the upswing. In 1943 there were an estimated 1,381,681 major crimes committed; in 1944 an estimated 1,393,655; and in 1945 an estimated 1,565,541. In 1945 each offense class rose above previous years. Robberies were up 23.6%; auto thefts, 18.7%; burglaries, 17%; negligent manslaughters, 16.2%; and murders, 10.1%. Aggravated assaults rose 8.7% and an 8.6% rise was recorded for larcenies. Rape increased 5.7%.

In Wyoming a 69-year-old retired farmer was kidnapped and his truck was stolen. The owner was forced out of the truck in Denver, Colo. His abductors were arrested in Salina, Kan., and upon conviction were sentenced to serve 15 years each in a federal penitentiary. In Prairie City, Ore., \$1,600 was taken from the Grand County bank. Eleven days later the perpetrator of this crime was killed by special agents and a deputy sheriff in a remote area of the state of Utah.

In Florida and Missouri a black market in railroad tickets was broken up and the operators were fined and sentenced to jail. A man who used more than 55 aliases and cashed more than \$100,000 in bogus checks throughout 28 states was apprehended in Seattle, Wash.

For the 1945 fiscal year, 13,813 convictions were recorded in cases investigated by the FBI with sentences totalling 31,962 years, 4 months and 6 days, 1 death sentence and 6 life sentences. Fines, savings and recoveries amounted to \$16,534,436.21, a total of 8,955 fugitives were located, and 7,892 automobiles were recovered in cases investigated by the FBI.

At the end of the 1946 fiscal year there were 101,578,578 sets of fingerprints on record at the FBI identification division. During the year the FBI laboratory conducted 67,229 examinations involving 104,780 specimens of evidence. With the classes graduating during the year, the roster of National academy graduates reached a total of 1,381. Among these officers were representatives of every

state in the union and in addition the Panama Canal Zone, Alaska, Puerto Rico, China, the Philippine Islands, England, Canada and Newfoundland.

Sentences meted out in the 11,873 convictions during the 1946 fiscal year totalled 26,624 years, 6 months and 13 days and in addition 5 life sentences. Fines imposed amounted to \$1,449,668 and savings and recoveries reached \$67,035,267. There were 10,990 fugitives located and 11,458 automobiles recovered in cases investigated by the FBI.

(See also Crime; Kidnapping; Police; Secret Service, U.S.) (J. E. H.)

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Federal Children's Bureau

See CHILD WELFARE.

Federal Communications Commission

The decade 1937–46 offered a particular challenge to man's imagination and inventiveness in the field of communications. It demonstrated that the age of miracles was not over as far as electronic developments were concerned. Frontiers were pushed back farther than was thought possible at the beginning of the decade and new services, then undreamed of, became a reality.

Nearly four years of war necessarily retarded normal expansion of electrical communication services in the United States but, at the same time, it produced new apparatus and techniques for military purposes. With the national emergency ended, these found invaluable peacetime application, particularly in radio. Opening of new reaches in the spectrum not only provided more room for the many classes of transmission but offered an opportunity for wire services to utilize radio in the modernization of the older forms of communication.

In 1937 the Federal Communications commission, then only three years old, was trying to find places on the lower frequencies for a rapidly increasing number of program broadcast stations, besides regulating telephone, telegraph, radio and cable common carriers engaged in interstate and foreign communication. In 1946 it was regulating and fostering the growth of FM (frequency modulation) and television broadcasting, facsimile, aviation, amateur and a host of new or prospective radio services.

Radio Spectrum.—In 1937 radio was able to use only a small part of the radio spectrum. Before World War II, this active portion extended from 10 kilocycles to 300 megacycles (a megacycle is 1,000 kilocycles). The usable portion of the spectrum became so crowded that it could not accommodate all services. But developments were such that, in 1945, it was found possible to extend the potential radio "ladder" to 30,000 megacycles. This made room for new services as well as expansion of the old. Even so, parts of the spectrum again were becoming so congested that, until apparatus was available to make use of even higher frequencies, space had to be shared where it was possible to do so.

Standard Broadcast.—In 1937 there were about 700 standard broadcast stations; in 1946 the number approached 1,000, not including 300 whose construction had been authorized but which were not yet on the air. At the beginning of 1946 about 56,000,000 receivers were in use. The so-called antimonopoly rules were promulgated by the commission in 1941 after three years of inquiry into network practices and, in 1943, were sustained by the

supreme court. These rules, in general, were designed to foster competition in broadcasting and give the individual stations greater freedom in program selection. The sale by RCA of the Blue Network under these provisions added a fourth independent network. As a further curb to monopoly growth, a rule adopted in 1943 limited ownership by one interest to one station in a locality. A survey of broadcast programs and advertising caused the commission, in 1946, to conclude: "Primary responsibility for the American system of broadcasting rests with the licensees of broadcast stations, including the network organizations. It is up to the stations and networks rather than to federal regulations that listeners must primarily turn to for improved standards of program service." However, in reiterating its responsibility to the public, the commission served notice that it would be more exacting in reviewing over-all performance of stations in the light of promises made in their original applications. An orderly shift of standard broadcast frequency assignments under the North American Regional Broadcasting agreement, effected in 1941 and supplemented by an interim agreement in 1946, reduced mutual interference from stations operating in Canada, Cuba, Mexico, the United States and some other adjacent countries. Reallocation proposals in 1945 would add the 540 kilocycle channel to the standard broadcast band of 550-1,600 kilocycles. Re-examination, begun in 1945, of "clear channel" (wide coverage) stations revealed that 381/2% of the country with more than 10,000,000 people still received no satisfactory daytime broadcast service and that 21,000,000 people in 57% of the country got no primary service at night.

International Broadcast.—Under international agreement, high frequency bands were allocated for overseas broadcasts. Commercial programs for international broadcast stations located in the United States were authorized in 1939. After 1937 the number of these domestic stations increased from 12 to 37. International broadcast stations were highly useful in the war effort by carrying information on U.S. war aims and military progress to the axisoccupied nations, Allied and neutral nations, and by giving U.S. troops up-to-the-minute news of their homeland.

Educational Broadcast.—Educational institutions were among the earliest licensees of standard broadcast stations. By 1925 their number had reached 171, but a decade later only 31 remained in that field. In 1938 a high frequency band was reserved for noncommercial educational use and, 7 years later, 20 FM channels were allocated for expansion of this type of service. In 1946, 6 noncommercial educational stations were in operation and 20 more had construction permits.

FM.-Frequency modulation of the wide-band type had greater tonal range and was more immune to interference than standard broadcast (amplitude modulation). For that reason it was better able to use higher frequencies. Released for experimentation in 1939, channels for FM broadcast were opened to commercial service in 1941. At that time the commission took note of the large number of FM and AM applicants associated with newspapers and conducted hearings, the results of which were reported to congress in 1944. In 1945, after extensive study, FM was assigned a higher and better position in the spectrum. "Public interest," said the commission at that time, "requires that FM be established in a permanent place in the radio spectrum before a considerable investment is made by the listening public in receiving sets and by the broadcasters in transmitting equipment." Of about 65 FM stations operating in 1946, only 5 were on the old band exclusively. Construction of more than 500 new stations

had been authorized. In 1946, one out of every five FM channels allocated to large cities was reserved for future assignment. Channel apportionment was premised upon equitable distribution of service.

Television.-Visual broadcasting saw 17 experimental stations operating in 1937. Two years later, high-frequency bands were set apart for this projected service. Because of engineering and other problems, extensive commissionindustry inquiry was conducted throughout 1939 and 1940 with the result that conflicting systems were reconciled to permit reception on standard receivers, and commercial television was given the green light in 1941. Six commercial stations were licensed before the war stopped further construction. Later, 24 additional stations were authorized by the commission. Some 7,000 television receivers were estimated to be in use at the start of 1946, with contemplated production of more than 100,000 before the end of that year. In 1946, 13 channels between 44 and 216 megacycles were assigned for commercial television, and space was allocated in the 480-920 megacycle band for experimentation with colour pictures. Before the war, it appeared that television would be a purely local affair, since its initial projection was limited to places in the line of sight of the transmitting antenna. However, extension of the coaxial cable system and new radio-relay devices promised to carry programs far from their place of origin. A network televised program on Lincoln's birthday in 1946 was made possible by completion of the New York-Washington section of the coaxial cable. There was also the possibility that television, as well as facsimile, might be combined with telephony so that parties to telephone conversations could see as well as hear each other.

Facsimile.—Facsimile communication had been employed by common carriers, such as the telegraph, for many years. Tests for transmitting still pictures over standard broadcast facilities were authorized in 1937. Though facsimile broadcast was still experimental, the commission by 1946 permitted it to use the regular FM channels as well as a special band in seeking to develop a new and economical means of speeding script, printed matter and pictures through space. Facsimile had particular news service possibilities, and even in 1946 it was experimentally possible to connect it with the telephone so that a caller, failing to receive an answer, could leave a message. Wide use for facsimile was foreseen in the telegraph industry and in police radiocommunication.

Amateurs.—The self-styled "hams" were of inestimable value in advancing radio and rendering emergency service in war and peace. Even in 1937 this pioneer fraternity had nearly 37,000 active members. Their number in 1946 approached 80,000. As was the case in World War I, amateur operation ceased during World War II but many "hams" continued to function in the defense forces. Beginning in late 1945, relinquishment of frequencies by the military permitted amateurs gradually to regain their former channels until, by mid-1946, they had most of their prewar band, with some additions. A new system of amateur call letters made full use of the prefix K (as well as W) and permitted thousands of additional assignments without exceeding five symbols.

Aircraft and Ships.—The end of World War II brought a flood of radio applications from a new aviation-conscious public. Since life and property were at stake, the commission provided needed channels and simplified and speeded the licensing procedure. In ten years the number of aviation stations grew from slightly more than 700 air-

craft and about 500 land stations to 7,000 and 1,500 respectively. Radio authorizations for normal shipboard use exceeded 8,000.

Police, Fire and Forestry.—In the emergency services, the importance of police communication was shown in the fact that in 1946 the approximately 3,000 police networks was double the number in 1937. Frequencies were increased to provide for future transmission of photographs and fingerprints. Fire departments, which formerly shared police radio systems, were assigned channels of their own. Though there were only 27 fire radio systems in 1946, nearly 100 cities of more than 100,000 population indicated intention to add radio to their fire systems. The number of forestry radio stations had increased to more than 600 since this service was established in 1939.

New Services.—Railroad safety was furthered by a special train communication service, inaugurated in 1945. The following year saw establishment of stations in the public services for electric, gas and water companies and petroleum pipe lines. Bands were assigned for industrial and medical radio equipment to help prevent interference from diathermy and like apparatus.

Experimental Stations.—There were more than 1,000 experimental radio stations in 1946. A mobile service, opened to experimentation in that year, offered aid to dispatching and controlling the movement of ambulances, doctors' cars, passenger buses, taxicabs, delivery and repair trucks and boats. In addition, telephone companies were conducting experiments in many municipalities on linking radio calls from public vehicles to the wire systems, so that a passenger might be able to put in a paid call from a moving train, bus, boat or plane. The first such experimental call made overseas occurred on July 16, 1946, when an auto passenger phoned from St. Louis to Honolulu. War popularity of the "walkie-talkie" resulted in plans for a citizens' radio communication service to accommodate the use of portable apparatus by individuals at home, work or play. The benefits of short-range radio communication in large industrial plants, on farms and ranches, and in mountain areas were obvious.

Telephone.—In 1936, it cost \$8.50 for a three-minute day station-to-station U.S. telephone call from coast-tocoast; in 1946 it cost \$2.50. Periodic reductions in U.S. toll rates during the decade 1937-46 aggregated more than \$100,000,000 annually, based on the volume of business at the time such reductions were made, but exceeded \$200,-000,000 annually on the basis of business volume in 1946. Interstate toll rates became uniform. More than 30,000,000 telephones were in use in 1946, and more than 1,500,000,ooo toll calls were being handled annually. In 10 years, local calls had increased 40% and toll calls more than 100%. However, three out of every five farm homes remained without telephone service. Between 1920 and 1940 the number of farm telephones decreased 39%, although electrified farms showed a 34% increase. Provision was made for using radiotelephone transmission to help bring telephone service to isolated communities. Developments in radiotelephony forecast extending common carrier service to vehicles on land, sea and in the air. In 1945 there were three point-to-point radiotelephone stations giving domestic service. In the same year the U.S. supreme court upheld the Federal Communications commission's action in enjoining hotels from collecting surcharges on toll calls. The commission proposed, in 1946, that recording devices be sanctioned as regular telephone equipment under conditions which would assure knowledge to parties engaged

in telephone conversation that these appliances were employed.

Wartime restrictions on public overseas radiotelephoning were lifted in 1945. In ten years the cost of a telephone call from New York to London had been cut from \$75 to \$12. Thirteen public point-to-point stations afforded contact with 39 foreign places.

Telegraph.—The merger of Postal Telegraph with Western Union, effected in 1943 for economic reasons, permitted elimination of many duplicate facilities, including nearly 2,000 offices. In 1946 the commission granted Western Union a general 10% rate increase but ordered an investigation of that company's financial situation. Meanwhile, the new unified telegraph system was being modernized by installation of FM radio-beamed channels between busy centres, changing from manual to mechanical (reperforator) switching systems at major relay points, and utilizing telefax (facsimile) to pick up and deliver messages where volume of business warranted. Use of the radio telegraph beam was expected to eliminate costly wire lines as well as interruptions to service caused by storms and electrical disturbances.

In 1943 congress deferred a proposal to unify U.S. overseas radiotelegraph and cable carriers. For years the commission had been seeking parity and uniformity in international rates. In 1945 rates to Europe, Central and South America, the West Indies and the Philippines were reduced to a uniform pattern, followed a year later by rates to other foreign countries. Commission activities after 1940 made it possible to open many new circuits, including direct contacts with various British empire points. In 1946 the FCC undertook review of overseas radiotelegraph service preparatory to formulating a policy for future development. The United States in 1946 had radiotelegraph communication with about 70 foreign points.

Cables.—This oldest means of international electrical communication had remained practically static in mileage for many years. The 120,000 mi. of U.S. ocean cable lost some circuits temporarily during World War II. The United States controlled about 32% of the world's cables and Great Britain about 58% in 1946.

National Defense.—National defense aspects of electrical communication had been stressed in the Communications act of 1934. In 1940 the president created a special Defense Communications board (which later became the Board of War Communications) to co-ordinate defense communications activities. The FCC established a Foreign Broadcast Intelligence service which monitored foreign broadcasts during the war, while its own Radio Intelligence division policed the domestic ether. With listening stations at Guam, Kauai, Portland (Oregon) and Silver Hill (Maryland), the F.B.I.S. analyzed 2,500,000 words of daily overseas broadcast and speeded reports to 25 military and other government agencies. In the home sector, the R.I.D. guarded against axis transmission and helped furnish bearings on U.S. aircrast. The F.B.I.S. was absorbed by the war department in 1945 but the R.I.D. continued to monitor the ether for illegal transmission and to protect against interference. (See also RADIO; TELEG-RAPHY; TELEPHONE; TELEVISION.) (C. R. D.)

Federal Council of the Churches of Christ in America

Organized in 1908 to express the essential oneness of the Churches of Christ in America and to unify effort, the council by 1946 represented 25 denominations with about 28,000,000 members and 140,000 congregations. One small body, the Reformed Episcopal, withdrew during the

decade 1937-46, while the Presbyterian Church U.S. (by 1e-admission), the Protestant Episcopal, the Church of the Brethren and three Eastern Orthodox Churches—the Syrian, Ukrainian and Russian—joined the council.

Because of reorganization late in the previous decade, the council operated more strictly and directly under the control of the member bodies than formerly. Secondary representation of its autonomous but affiliated state and local councils was provided by the appointment of nominees of these agencies by their respective denominations.

The council experienced extraordinary institutional growth during the decade. Its budget increased nearly threefold, reaching \$675,000 in 1945. Permanent assets, still only about \$400,000, increased three and one-half times. Departments and separately staffed commissions and committees increased in number by two and one-half times. Parallel growth of an autonomous but closely interrelated system of state and local councils both in numbers, resources and activities matched that of the national body itself.

The basic concerns of the church which had continuous recognition from the council's beginning were steadily fostered. Evangelism had major stress through a continuous series of preaching missions during the decade covering most of the major and secondary cities of the United States, and more specialized religious campaigns on university campuses, for teachers and for ministers, as well as in military establishments and in war industrial communities. Christian social relations were magnified through educational and service activities in the fields of industry, family life and relations with social agencies. The department of research and education conducted influential investigations, especially in political and economic fields from the Christian standpoint. Racial tensions, aggravated by the movements of population and the spreading unrest of the war period, were interpreted especially by race relations clinics in numerous cities where first-hand local conditions were brought under the review of responsible citizens. The department of religious radio operated on a greatly expanded scale as the chief agent of Protestantism in its field. In 1945 it conducted 578 produced or sponsored programs.

The war crisis which dominated the decade, both in its earlier stages and during the period of hostilities and the postwar period, magnified the functions of the department of international justice and good will. Its more aggressive activities were carried on through a special commission on the bases of a just and durable peace, which conducted a series of exceedingly influential nation-wide conferences on the various phases of the war; was directly concerned with the modification at many points of the Dumbarton Oaks proposals and their inclusion in the charter of the United Nations; and in the summer of 1946 convened in Cambridge, England, the first international postwar church conference on peace and reconstruction at the request of the World Council of Churches. The chairman of the commission, John Foster Dulles, was one of the leading advisers on U.S. foreign policy during much of this period.

Special wartime activities of the Federal Council included greatly augmented attention to the army and navy chaplains, co-ordination of services in camp and defense communities and to service in directing the resettlement of Japanese evacuated from their homes during the war; also to co-operative work for aliens and prisoners of war; and enterprises of overseas relief. The interests of conscientious objectors and the returning service men were also matters of specific organization and effort. The ma-

chinery of service in these fields began to be demobilized after the cessation of hostilities, and the responsibility for these interests was taken over by other departments. Thus, returning service men were being organized as the young laymen of the churches, whose permanent place as civilians in Christian life and organization was a matter of intense emphasis.

During the decade, new departments of work were developed, including Public Relations, the rapidly expanding department of religion and health, a committee on the church and economic co-operative movements and a commission on the ministry, whose first concern was to find recruits for the ranks of the local pastorate, greatly depleted by war.

A Washington office was opened to furnish information as to legislative issues involving the institutional or moral concern of the church, and a research agency jointly maintained with the Home Missions council was increasingly useful in putting the results of first-hand investigation at the service of communities and local councils in the guidance of their programs. More members of its staff and of the local councils had adequate technical preparation in the lines of their specialization. A group of occumenical fellowships was provided by the generosity of the Julius Rosenwald fund to provide advanced training and internship in preparation for council secretaryships, both national and local.

In its reaction to the unprecedented needs of the decade, the Federal Council functioned as "the voice of the Protestant Church." It faithfully reflected the changing currents of Protestant thinking during the period. It maintained the independence of the church and its duty of criticising the world of politics and economics in the light of the Christian conscience. The council itself, however, shifted its grounds in important respects. Its earlier pacifistic resolutions with respect to war gave way to the regretful conclusion, after long examination of specific war issues, that it was the duty of the church, since war was an actuality, to support the Allied cause, especially in view of the fact that the ultimate Christian principles and the welfare and very existence of churches in many countries were at stake. In reaching this conclusion, as in all its other major thought processes, the council reflected two convictions which would not have been made central in earlier decades. The first was a return to a profounder dependence on theology. Thus, the examination of war issues was made by a commission of 26 Christian scholars which reported in 1944. The second emphasis was on the centrality of the church, the conviction that it was an actual world society, the maintenance and purification of whose own life were the crucial point of its responsibilities for the guidance of civilization in crises of human affairs. Consequently the council spoke for the U.S. churches in a wide range of temporal problems, such as the use of atomic energy.

An important phase of the council's influence was exerted through its publications and literature. Its monthly Bulletin and bi-monthly Information Service recognized as authoritative in the records of the church's current life and its relationships to public affairs. The many departments continued to issue and circulate a vast number of pamphlets, and several council secretaries made permanent contributions to the literature of their respective fields, among them Walter W. Van Kirk, F. Ernest Johnson, B. Y. Landis, Henry Smith Leiper, Seward Hiltner, James Myers and John Fortson.

The actions of the Federal Council often were joint actions of two or more national interchurch agencies. Representatives of these more specialized organs of the church's co-operative life sat on the Federal Council committees, and the majority of the major reports and projects of the decade were the results of joint sponsorship and action. All major field activities were cleared through the intercouncil field department. A plan was launched in 1942 for uniting the Federal Council and seven other major interchurch agencies of this more specialized sort. The plan was referred to the agencies and their constituent denominations, whose favourable action seemed to assure that at least the Federal Council, the Home Missions council and the International Council of Religious Education would be merged in a still more inclusive council, representative of a fuller program of united activity as well as a larger number of denominations.

A few important denominations remained outside of Federal Council membership through fear of centralization or on account of doctrinal conservatism. Two rival councils aspiring to be national in scope appeared during the decade.

Meanwhile the council came into the closest organizational and working relations with the evolving World Council of Churches. Its department of relations with churches abroad had long been a tie with one of the major streams of world Christianity, absorbed in the World Council. Without becoming the constitutional organ of the World Council (as had the British Council of Churches) the Federal Council enlarged the scope of its world relationships through the appointment of a World Council secretary as its occumenical secretary and by sharing in the postwar rehabilitation and relief activities of the World Council. Its executive secretary, Samuel McCrea Cavert, made three extended European trips and was loaned for six months to the Geneva office of the World Council to help set up its expanded program. The final technical relations of the Federal Council and the World Council remained to be determined after the Federal Council's probable merger with the other U.S. interchurch agencies. Leadership of the council during the decade was in the hands of the following distinguished presidents: Rev. Edward DeWitt Jones, pastor of the Central-Woodward Christian church, Detroit, 1936-38; Rev. George A. Buttrick, pastor of the Madison Avenue Presbyterian church, New York city, 1938-40; Dr. Luther A. Weigle, dean of Yale Divinity school, 1940-42; the Rt. Rev. Henry St. George Tucker, presiding bishop of the Protestant Episcopal Church in the United States 1942-44 and Rev. G. Bromley Oxnam, bishop of the Methodist Church, 1944-46. Executive leadership continued throughout the period in the hands of the general secretary, Dr. Samuel McCrea Cavert. (H. P. D.)

Federal Crop Insurance Corporation See AGRICULTURE.

Federal Deposit Insurance Corporation

During the years 1937–46 the potential liabilities of the FDIC increased rapidly while the number of banks requiring the aid of the corporation declined steadily. Deposits of insured commercial and mutual savings banks rose from \$48,000,000,000 in 1937 to more than \$152,000,000,000 in 1946, more than a threefold increase. While the percent of deposits covered by the \$5,000 insurance maximum increased slightly from 44% to 46%, the

amount of deposits covered by this maximum increased from \$21,000,000,000 to \$69,000,000,000.

Periodically, the corporation continued to make special calls upon all insured banks to obtain an estimate of the amount of its liability as an insurer of bank deposits. The insurance protection given depositors in insured banks on these special call dates is shown in Table I.

Table 1.—Insurance Protection with a Maximum Coverage of \$5,000 in Insured Banks—Special Call Dates, 1936-45

		Accounts	Deposits			
Number Date of call of banks		Percent of Total \$5,000 or number less	Amount Per- (in millions) cent Total Insured insured			
May 13, 1936 Sept. 21, 1938 Sept. 24, 1941 Oct. 10, 1945	13,754 13,487	58,785,000 98.4 62,731,000 98.3 69,495,000 98.1 92,333,000 96.4	\$46,168 \$20,456 44 49,224 22,610 45 69,566 27,639 39 140,603 65,859 46			

During this ten-year period, the corporation paid depositors in 170 insured banks which were placed in receivership. Disbursements in this connection amounted to \$72,000,000. Moreover, during this same period the corporation made extensive use of another method of protecting bank depositors from loss. Under this latter procedure, the corporation made advances of \$165,000,000 to facilitate the mergers of 126 weak insured banks with strong institutions. This power could be used only when such action reduced the risk or averted a threatened loss to the corporation. In such cases there was no interruption of banking service, and all depositors were fully protected against loss. It was estimated that only about 1,800 of the more than 1,100,000 depositors in both the receiverships and mergers would suffer any loss, and their loss would amount to less than \$2,000,000. Table II shows the number and deposits of the banks which received financial aid under both methods and the amount of the FDIC disbursement for each year of the period.

Table II.—Number and Deposits of and FDIC Disbursements to Insured Banks Which Were Placed in Receivership or Merged with Financial Aid of FDIC, 1937–46

Year	Number of banks	Total deposits (in thousands)	FDIC disbursement (in thousands)
Total, 1937-1946	296	\$462,430	\$237,319
1937	75	33,345	19,203
1938	74	59,722	30,479
1939	60	157,781	67,793
1940	43	142,390	74,352
1941	15	29,721	23,880
1942	20	19,010	10,910
1943	5	12,535	7,171
1944	2	1,915	1,498
1945	1	5,695	1,768
1946	1	316	265

The procedure of making advances to facilitate a merger proved to be desirable both from the point of view of the corporation and from that of the depositors and communities involved. As a result, the corporation made greater use of its power to effect mergers of insured banks in difficulties and less often paid depositors in closed banks. Since all deposits were protected in banks which were merged, the figure for total deposits could be more significant as a measure of the corporation's potential liability than that for insured deposits. On June 30, 1946, total deposits amounted to \$152,000,000,000,000, while it was estimated that insured deposits on that date amounted to \$69,000,000,000.

Throughout the decade 1937–46, more than 90% of all commercial banks in the United States were insured by the FDIC; these banks held more than 95% of total deposits in all commercial banks. Deposits in insured banks increased from \$48,000,000,000 on June 30, 1937, to \$148,000,000,000 at the end of 1945. On June 30, 1946, deposits decreased to \$141,000,000,000, resulting from a decline in deposits of the U.S. government. During this same period there was a marked increase in both the number and deposits of insured mutual savings banks.

In 1937, only 56 such banks with total deposits of \$1,000,000,000 were insured. This represented about 10% of both the number and deposits of all mutual savings banks in the United States By 1946, there were 191 insured mutuals with deposits on June 30 of \$11,000,000,000, comprising slightly more than one-third of the number of all mutual savings banks and about two-thirds of their deposits. Table III shows the number and deposits of insured commercial and mutual savings banks during the years, 1937–46.

Table III —Number and Deposits of Insured Commercial Banks and Insured Mutual Savings Banks June 30, 1937–46

		Insured con	nmercial banks	insured mutual	savings banks
June 30		Number	Deposits (in millions)	Number	Deposits (in millions)
1937		13,887	\$47,830	56	\$1,002
1938		13.727	47,461	56	1,008
1939		13,571	52,327	49	1,246
1940		13,483	58,425	51	1,428
1941		13,426	65,617	53	1,802
1942.		13,403	71,162	53	1,864
1943		13,302	94,582	61	2.739
1944	•	13,269	114,180	192	8,235
1945.		13,282	134,282	192	9,671
1946		13,335	140,649	191	10.979

Accompanying the growth in deposits was a growth in the assets of insured commercial banks, from \$56,000,000 000 at the beginning of 1937 to \$158,000,000,000 at the end of 1945. From 1937 to 1941, the growth in bank assets was fairly slow and regular, reflecting the economic recovery from the depression of the early 1930s Then, as a result of the war in Europe, U.S. defense activities, and finally U.S. participation in the war, the rate of increase was greatly accelerated. By June 1943, assets had increased to \$102,000,000,000, and they continued climbing until the end of 1945. Increased holdings of US government obligations accounted for almost three fourths of this increase. In 1946, however, holdings of U.S. government securities finally started to decline Loans and discounts grew from \$16,000,000,000 in 1937 to \$27,000,000,000 on June 30, 1946, and were expected to continue to increase as business expanded.

The period was one of favourable earnings Total operating earnings and expenses of insured commercial banks both increased, amounting to approximately \$2,500,000 and \$1,500,000 respectively in 1945 as compared with \$1,600,000 and \$1,100,000 in 1936. While net profits available for stockholders increased from \$524,000,000 to \$906,000,000, the amount of cash dividends declared and interest paid on capital changed slightly—\$274,000,000 as against \$223,000,000 During this period of high earnings, banks built up their surplus accounts. However, their assets increased more rapidly than their capital accounts, resulting in a decrease in the ratio of capital to total assets from 11 3% in 1937 to 6 0% on June 30, 1946.

During this period of prosperity the FDIC likewise built up its surplus, although not so rapidly as deposits in insured banks increased. Most of the income of the corporation continued to consist of assessments paid by insured banks at the annual rate of one-twelfth of 1% of their total deposits. The amount of these assessments increased from \$39,000,000 in 1937 to \$94,000,000 in 1945. Total income of the corporation during its entire period of operation from Jan 1, 1934, to June 30, 1946, amounted to \$777,000,000, consisting of \$616,000,000 from assessments and \$161,000,000 from investments and other in come. Total expenses during the period amounted to \$73,000,000, of which \$30,000,000 were net deposit in surance losses and expenses and \$43,000,000 were ad ministrative expenses and other charges.

Total capital of the corporation consisted of \$289,000, 000 of capital stock issued at its organization and \$704,

ooo,ooo accumulated surplus. By the end of 1946, surplus was expected to amount to more than \$750,000,000, which would provide a total capital and surplus in excess of \$1,000,000,000. It was highly desirable that the corporation build up this surplus during times of high bank earnings so that it would have a fund sufficient to meet any de mands if serious banking difficulties should recur. The corporation suggested that the \$289,000,000 of capital be repaid over the succeeding few years without, however, reducing the corporation's capital account below \$1,000,000,000. Repayment of this original capital would make the deposit insurance fund a mutual fund entirely sus tained by contributions made by the banks.

By executive order of the president, No 9148, of April 27, 1942, all of the functions, powers and duties of the Farm Credit administration and of the governor thereof under the Federal Credit Union act of June 26 1934 as amended, were transferred to the Federal Deposit In surance corporation. Credit unions—co operative associations organized to encourage thrift among their members and to provide a limited source of credit for productive purposes—were chartered and examined by the corporation. Their shares, however, were not insured

On Jan 5, 1946, Maple T. Harl became chairman of the board of directors, succeeding Leo T Crowley who, after 12 years of service, resigned effective Oct. 15, 1945. Phillips Lee Goldsborough served as a member of the board of directors from April 29, 1935, until his death on Oct 22, 1946. The resulting vacancy on the board had not been filled by the end of 1946 On Oct 24 1938, Preston Delano was appointed comptroller of the currency and became ex officio member of the board of directors, succeeding J F. T O'Connor who resigned as comptroller of the currency, effective April 17, 1938.

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Federal Home Loan Bank

See Housing

Federal Housing Administration

See Housing

Federal Land Banks

See FARM CREDIT ADMINISTRATION.

Federal Legislation

See Law

Federal Loan Agency

See Housing

Federal National Mortgage Association

See RECONSTRUCTION FINANCE CORPORATION.

Federal Power Commission

Strengthened by the passage of the Federal Power act of 1935, which extended its authority over utilities en gaged in the interstate transmission and sale of electric energy, the Federal Power commission began the task of reducing inflated capitalization, ending interlocking directorates and freeing operating subsidiaries from burdens imposed by holding companies and promoter "parents."

More than \$1,000,000,000 of write-ups, excess costs and charges were eliminated from electric utilities' plant accounts by "original cost accounting," based on the original cost of properties to the parties first devoting them to public service.

Rate regulation was simplified and expedited by supreme court decisions in the Hope Natural Gas company and other cases, upholding the commission's use of original cost and prudent investment in determining rate bases. Regulatory agencies, state and federal, were freed from the old *Smith* v. *Ames* reproduction-cost requirement by the court's affirmation that in rate making commissions need not be bound by any fixed formula.

Consumers saved hundreds of millions of dollars by rate reductions in every state and section. During the tenyear period 1935 through 1945, when the use of electric energy increased nearly 120%, residential rates declined approximately 20%, commercial rates slightly more than 15%, and industrial rates nearly 10%. Reduced rates and increased use resulted in an approximate 30% decrease in the over-all average cost per kilowatt-hour. All but two cities of 50,000 or more population had reductions in residential bills.

Electric energy produced for public use increased from 109,316,033,000 kw.hr. in 1936 to 212,895,000,000 in the 12 months ending June 30, 1946. Nonutility (principally industrial) production rose to 45,448,863,000, making total U.S. power production 258,343,692,000 kw.hr. War demands brought an all-time peak of 279,524,691,000 kw.hr. in 1944, of which 228,188,844,000 kw.hr. was for public use. Generating capacity (installed) in utility service increased in 10 years from 35,081,569 to 50,160,191 kw.; nonutility from about 10,000,000 to 12,765,744, making the total U.S. generating capacity 62,925,935 kw.

When the Natural Gas act, passed by congress in 1938, entrusted to the commission the regulation of the transportation and sale of natural gas in interstate commerce, states and cities appealed for lower gateway rates. Natural gas rate reductions within seven years had reached a cumulative total of \$118,548,000. Certificates of public convenience and necessity were granted authorizing the construction of thousands of miles of pipe lines, the longest, stretching 1,265 mi. from Texas to West Virginia, reaching a capacity of 300,000,000 cu.ft. per day.

Peacetime gas projects exceeded those of the war period. The 1,200 mi. pipe line from Texas to California authorized after the war was rivalled by numerous other applications before the commission. Large extensions were authorized to increase the gas supply of Chicago, Detroit, Kansas City, Cincinnati and other cities. More than \$100,000,000 was involved in projected lines to Michigan and Wisconsin.

After Feb. 7, 1942, when a Gas Act amendment conferred this authority, the commission issued certificates authorizing the construction and operation of 6,588 mi. of natural gas pipe lines and the installation of 301,905 compressor horsepower. In 1946, the commission completed the most comprehensive natural gas investigation ever made. At hearings in Kansas City, Oklahoma City, Houston, New Orleans, Biloxi, Miss., Chicago, Charleston, W.Va., and Washington, producers, pipe line operators, geologists, state officials, labour union leaders and other witnesses testified on every phase of the industry.

Water power developments were licensed, power possibilities of numerous flood control projects investigated and power markets studied. Following a survey of unlicensed

hydroelectric projects, several large plants were required to accept federal licences. Co-operating with the U.S. engineers, reclamation bureau and other agencies, and with the governors of states concerned, the commission, as a member of the Federal Inter-Agency Basin committee, joined in establishing inter-agency committees for the Columbia and Missouri river basins, and took an active part in preparing the plans for the vast multipurpose power, flood control, irrigation and navigation developments proposed for the postwar period. (J. W. Je.)

Federal Public Housing Authority

See Housing.

Federal Reserve System

The federal reserve system greatly expanded during the decade 1937–46 and clearly demonstrated its ability to serve the purpose for which it was created, by making easy the tremendous amount of financing necessary during World War II.

As an illustration of the way the system grew during the decade, the following summary is quoted from the 1945 annual report of the board of governors of the federal reserve system:

Membership in the Federal Reserve System increased in 1945, as it has in every year since 1939, and registered a net gain of seventy banks for the year. The number of national banks decreased by a net of eight while the number of state member banks increased by a net of seventy-eight. Eight of the ninety-five State banks admitted to membership were newly organized and eighty-seven were already in operation.

All but one of the eighty-seven had previously been admitted to membership in the Federal Deposit Insurance Corporation. Total deposits of these eighty-seven banks were about three hundred and seventy-eight million dollars. Over one-half of the State banks admitted to membership were located in three Federal Reserve districts—Cleveland, Chicago, and St. Louis.

The six thousand eight hundred and eighty-four member banks in operation at the end of 1945 accounted for forty-nire per cent of the number and eighty-six per cent of the deposits of all commercial banks in the country. These percentages compare with forty-four and eighty-six respectively at the end of 1939.

The State member banks of the Federal Reserve System acquanted for twenty-one per cent of the total number and sixtynine per cent of the deposits of all State commercial banks. The corresponding percentages were thirteen and sixty-eight respectively in December 1939.

Financing the War.—To aid the United States in World War II, the federal reserve system used its powers to assure an ample supply of funds. Close wartime co-operation between the treasury department and the federal reserve system made it possible to finance the most expensive war in history at low and stable rates of interest. A structure of interest rates on government securities conforming closely to the pattern prevailing at the beginning of the war was maintained. The rates on marketable securities ranged from $\frac{7}{8}\%$ on one-year treasury certificates to $\frac{21}{2}\%$ on the longest term treasury bonds.

Federal reserve purchases of securities provided the basis for the rapid growth of currency in circulation and also supplied the banks with additional reserves needed to support the expansion of bank credit and deposits. Under reserve requirements existing in 1946, each dollar of additional reserves permitted an expansion of more than six dollars in bank credit and bank deposits by the banking system as a whole.

Maintenance of interest rates at low levels served several purposes: it encouraged investors to purchase securities without waiting for higher yields and to hold them without fear of loss from price fluctuations; it kept the market free from disorderly movements and retarded the growth in bank earnings on securities purchased and finally, it held down the cost to the treasury of interest charges on the greatly expanded public debt. As a result of these measures and policies, the government experienced no difficulty at any time in raising the necessary funds. The average interest cost of the public debt to the treasury (and so, to the taxpayer) was less than 2%.

An executive order at the beginning of the war empowered the federal reserve banks to serve as authorized agencies for loans to be guaranteed by the war department, navy department and Maritime commission. Several thousand of these loans were handled during the emergency.

Record Money Circulation.—Wages rose tremendously during the decade, and with this increase the money in circulation rose from about \$6,500,000,000 in 1937 to more than \$28,500,000,000 in 1946. Never before in U.S. history had money in circulation reached such a huge total. One of the purposes of the setting up of the federal reserve system was to provide a means for expanding currency as the need arose. Of the \$28,500,000,000 of money in circulation, \$25,250,000,000 were federal reserve notes.

An analysis in Oct. 1946 of the denominations of currency in circulation disclosed a greater number than usual of large denomination currency. There were nearly \$2,500,000,000 in \$50 bills, and more than \$4,500,000,000 in \$1,000 bills; \$434,000,000 in \$5,000 bills; \$784,000,000 in \$1,000 bills.

Aid to Industrial Financing.—The system helped finance industry during the decade by making direct loans to individual corporations, by discounting notes originally taken by commercial banks and by making commitments to industry and to banks for large lines of credit which could be available at a moment's notice. Loans outstanding during the decade in any one week varied from \$1,000,000 to \$25,000,000, and commitments outstanding from \$1,500,000 to nearly \$21,000,000.

Rates on these industrial loans made direct to corporations varied from 2% to 5%. Rates on notes rediscounted by banks varied from 1% to 1½%. During the war years, the rates on commitments varied from ½% to 2%.

In the meantime, the federal reserve banks purchased tremendous quantities of government bonds, until the total in 1946 reached nearly \$23,500,000,000. When added to loans and discounts, the total federal reserve financing reached a high point in 1946 of \$24,314,000,000. This, of course, was in addition to the tremendous quantities of government bonds purchased by commercial banks and individuals.

Low Interest Rates.—The activities of the system and its policies helped to maintain low-interest rates on government obligations during the entire decade by keeping rediscount and loan rates low. Rediscount rates to member banks, for example, were reduced from 1½% in 1936 to 1% in 1946.

Reserves (deposited with the local federal reserve bank by each member bank) rose from \$6,500,000,000 in 1936 to nearly \$16,000,000,000 in 1946. This steady rise during the decade greatly increased resources of the federal reserve system. One reason for the increase in member bank reserves was a change in policy of the system which, in 1936, required 13% of demand deposits (checking accounts) to be kept in the federal reserve bank as a reserve by each bank in a central reserve city. At the end of the decade, the requirement was 20%. For banks in reserve cities, the requirement in 1936 was 10% and at the end of the period, it was 20%. Country banks were required to keep 7% on reserve in 1936 and 14% in 1946. In addition, every bank

was required to keep 3% of its time deposits (savings) as a reserve in 1936 and 6% at the end of the decade.

Control of Consumer Credit.—During the war, the fed-

Control of Consumer Credit.—During the war, the federal reserve system was given the responsibility of controlling consumer credit (q.v.).

In its annual report to congress in June 1946, the board recommended that congress give consideration to the question of whether regulation of consumer credit should be continued on a peacetime basis as a subordinate but strategic factor in the maintenance of economic stability.

The report stated: "Over the past thirty years, consumer instalment financing has come to occupy an important and strategic place in the national economy. Such financing is essential to the mass distribution and consequently, to the mass production of consumers' durable goods. From time to time, however, the expansion and subsequent contraction of consumer credit have gone so far as to accentuate the upswings and downswings of the business cycle. There is no way of preventing such excessive expansion and contraction except governmental regulation of the terms on which consumer credit shall be made available, such as the down payment required on instalment sales or financing and the length of time permissible for instalment contracts."

The regulation was revised, in the light of the foregoing considerations, to focus it on instalment credit, both instalment sales and instalment loans, which constituted the great dollar bulk of credit subject to the widest expansion and contraction. Charge accounts and single-payment loans, in which cyclical fluctuations had been comparatively small, were eliminated from the scope of the regulation. By elimination of goods generating only minor amounts of instalment credit, the instalment sales provisions were confined to 12 major categories of consumers' durable goods. Instalment loans of \$2,000 or less, whether or not to buy goods in these 12 categories, continued to be subject to the regulation. The revision effected a substantial simplification of the regulation's provisions and made it administratively more workable.

Member Banks.—Net profits of member banks after taxes increased by \$139,000,000 in 1945 and reached a new peak of \$788,000,000. They had been rising steadily after 1942, and in 1943 had attained the highest point ever reported up to that time. Income from government securities and profits on sales of such securities were the principal sources of income. About one-third of net profits was paid out as dividends, and the remainder was added to capital accounts.

Earning assets of member banks exceeded \$107,000,000,000 at the close of 1945, having increased almost \$16,000,000,000 during the year. In amount, the increase was about the same as it had been in 1944, but as a percentage of total earning assets it was less than in any year after 1941. During the U.S. defense and war period, 1940–45, earning assets almost trebled, and an increasing proportion of the total consisted of United States government securities. At the end of 1945, this proportion was nearly 75%.

This level of bank profits, as compared with that of the late 1920s, resulted from circumstances different from those prevailing at that time. Total earning assets of banks were about three times as large in 1945 as in 1929. The rate of interest return on the earning assets, however, was decidedly lower. While the level of market interest rates fell substantially for a decade and a half, the average return received by banks from earning assets dropped even more. The composition of earning assets shifted from a dom-

inance of loans, a high-yield asset, to government securities, the lowest yielding of all earning assets. At the same time, however, losses declined greatly, while profits on securities sold and recoveries expanded.

This was also a profitable earning period for the federal reserve banks. In 1937, their total earnings were a little more than \$10,500,000; in 1945, the total earnings were more than \$92,500,000.

Foreign Transactions.—The year 1937 was marked by considerable, though gradual, shifts in foreign viewpoints toward the future of the price of gold, accompanied by heavy international movements of floating money. For a time following the Tripartite declaration in Sept. 1936 and the readjustment downwards of the currencies of France, Switzerland and the Netherlands, international currency relationships appeared to be more settled, and flights from one currency to another ceased; instead, there was a movement to get idle funds invested. It was a period of sweeping advances in most of the leading security markets, during the course of which large amounts of foreign capital were placed in U.S. stocks.

The peak of this movement was passed in Nov. 1936, but as the year 1937 opened, foreign investment in U.S. securities continued at a substantial, though diminished, rate. An additional influence tending to bring gold to the United States at this time was the transfer of Argentine funds for redemption of dollar bonds. The Argentine operations began in Dec. 1936 and were in heavy volume throughout the first quarter of 1937.

Stock market developments and the Argentine redemptions were both associated with the vigorous industrial advance. Recovery in the industrial nations gave Argentina the broadened markets for its products that enabled it to transfer funds in retirement of outstanding obligations in the United States. Expanding industrial profits, particularly in the United States, underlay the rise in equities.

Toward the end of 1936 it was apparent that the industrial movement was leading to speculative developments in certain commodity markets. This tendency continued through the first quarter of 1937.

The volume of foreign transactions passing through the Federal Reserve Bank of New York continued large during the decade. The magnitude of these transactions on behalf of the United States government departments and agencies declined sharply after V-J day, amounting to about \$40,000,000 in December as compared with a monthly average of around \$100,000,000 during the summer and with a peak of more than \$200,000,000 in Jan. 1945. At the same time, other activities increased as relations were resumed with a number of central banks in countries formerly occupied by the axis nations.

At the end of 1945, the Federal Reserve Bank of New York held accounts for the central banks of governments of 60 foreign countries.

The tendency in the latter months of the year was toward a reduction in the amount of dollar funds, which declined by an over-all amount of \$340,000,000 for the year. At the year end, these balances amounted to \$861,000,000 as compared with the high of \$1,246,000,000 recorded in June and the all-time high of \$1,650,000,000 for May 1944.

Holdings of United States government securities for account of foreign central banks and governments increased from \$960,000,000 in Dec. 1944 to \$1,696,000,000 in Oct. 1945, after which they declined. Gold held under earmark rose from \$3,937,000,000 in Dec. 1944 to \$4,294,000,000 in

Dec. 1945.

Exports and imports of gold were on a comparatively small scale.

New Check Collection System.—The American Bankers association and the federal reserve banks announced a plan in 1944 to make it easier for banks to sort checks for collection through the federal reserve system. The association distributed a booklet to all banks in the country describing the plan, and the reserve banks circularized all par-remitting banks in their respective districts.

Under the plan, "check-routing symbols" were assigned by the federal reserve banks to all par-remitting banks. It was recommended that the symbol be printed in the upper right-hand corner of checks, above the dollar amount, in combination with the A.B.A. transit number, which had been in use for years to identify the bank numerically. The A.B.A. transit number appeared as the numerator and the check routing symbol as the denominator of a fraction, as in the following example:

55-38 312

In the example, the first part of the A.B.A. transit number (to the left of the hyphen) designated the reserve city or state in which the bank was located (in this case, New Jersey), and the second part designated a specific bank in that state (Citizens' National bank, Collingwood).

In the check-routing symbol (the denominator of the fraction) the first digit designated the federal reserve district; the second designated the head office of the federal reserve bank, a branch office, or a special collection arrangement and the last digit indicated whether or not the check was receivable for immediate or deferred credit. In the example, the first digit designated the third federal reserve bank district, the second the Federal Reserve Bank of Philadelphia and the last indicated that the item was receivable for deferred credit.

This system was put into use rapidly, and had a money-saving result not only for individual banks but also for the federal reserve system. (See also Banking; Consumer Credit.)

(J. Y. B.)

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Federal Security Agency

Establishment of the Federal Security agency on July 1, 1939 brought together in one administrative organization major activities representing the responsibilities of the U.S. government for promoting and maintaining the health, education, economic security and welfare of the people. Continuing peacetime programs under the administration of the agency were all in operation prior to 1937.

Special emergency functions were assigned to the agency during the period of defense preparation and prosecution of World War II.

Public Health Service.—The U.S. public health service, oldest of the agency's units, had its inception in the marine hospital service established in 1798. As needs arose, various legislative enactments through the years extended its scope and functions until in 1944 passage of the public health service act consolidated and revised existing laws and materially strengthened the entire program for pro-

tection of the nation's health. Functions of the service during the decade included maintenance of quarantine services to prevent introduction of communicable diseases from abroad or spread of such diseases from state to state; research on the cause and prevention of diseases; assistance to state and local health services through technical assistance, leadership and the administration of federal grants-in-aid to the states.

During the war many public health service officers were assigned to emergency duty in the United States and abroad, and the service carried on special functions in connection with health needs of war congested communities, foreign quarantine procedures, control programs to deal with diseases constituting special wartime hazards, research for the army and navy, supervision of the production of biologic products for use by the army and navy and intensified industrial hygiene activities. The service also administered the U.S. cadet nurse corps (see Nursing, War.)

Office of Education.—Established by congress in 1867 to further the cause of education throughout the country, the U.S. office of education continued its services for state education authorities and the schools, colleges and libraries of the nation. Its functions were expanded and developed; it carried on many fact-finding, informational, research, advisory and other services through which knowledge and experience in all phases of education and from all parts of the country were pooled and made available for the guidance of school authorities. The office also had the responsibility of administering various federal grants to the states for educational purposes. During the war emergency the office administered several war training programs under which more than 11,500,000 men and women were enrolled and an additional 2,000,000 received instruction at the college level in engineering, science and

Food and Drug Administration.—The Food and Drug administration was set up by congress in 1927 to carry on regulatory activities begun some 20 years earlier in the department of agriculture. The administration received authority under several laws, of which the most far-reaching was the Food, Drug and Cosmetic act of 1938. The purpose of the laws administered by the Food and Drug administration was to protect consumers from products that might be objectionable for a variety of reasons—injurious to health; filthy or decomposed; short in weight or volume; debased with inferior ingredients; falsely labelled as to identity, quality, quantity or therapeutic or nutritional efficiency; or misrepresented in their labelling or in some other way (see also Drug Administration, U.S.).

In addition to extensive services for the armed forces during the war, regulatory work of the administration was directed toward maintaining the integrity of civilian supplies of foods and drugs and to preventing the criminal wastefulness which would result from careless handling and storage of both raw materials and finished products.

Social Security Administration.—The Social Security administration was established in July 1946 replacing the Social Security board created by the Social Security act of 1935. The administration took over the functions of the board relating to old-age and survivors insurance, employment security and public assistance together with activities of the Children's bureau transferred from the department of labour in July 1946 (see Social Security).

Other FSA Offices.—The Office of Vocational Rehabilitation was established as a unit of the Federal Security agency in 1943, following enactment of the Barden-

LaFollette act which amended earlier vocational rehabilitation legislation and expanded and strengthened the state-federal vocational rehabilitation program originally established more than 20 years before.

Approximately 40,000 physically and mentally handicapped persons of working age were rehabilitated into gainful employment through services of the expanded state-federal vocational rehabilitation program during the fiscal year ending June 30, 1946. An additional 110,000 were in process of rehabilitation. It was estimated that throughout the nation at least 1,500,000 disabled persons were eligible for and could profit from vocational rehabilitation in order to become self-supporting or advance normally on jobs.

The Office of Community War Services was established during the emergency period as the war arm of the Federal Security agency. It served as a centre for health and welfare activities both within the Federal Security agency and in other federal as well as private national organizations. Throughout the country it worked with the states and their local communities to stimulate the development of health and welfare activities necessitated by the war.

(W. B. MI.)

Federal Theatre

See THEATRE.

Federal Trade Commission

The Federal Trade commission in 1946 adopted procedural policies designed to expand the co-operative phases of its work and thereby improve and expedite enforcement of laws under its jurisdiction. The program contemplated that the commission, through fuller utilization of its trade practice conference procedure, would cooperate more effectively with business concerns and adequately protect them and the public against unfair trade practices and monopolistic restraints. In accordance with the program the commission was to investigate probable violations of law and, where necessary, take uniform corrective action on an industry-wide basis rather than issuing complaints against individual violators. Where circumstances warranted, members of an industry were to be given an opportunity to eliminate unlawful practices through establishment of trade practice rules or by voluntary stipulations to cease and desist, making possible more prompt, equitable and economic settlement of issues.

The Federal Trade Commission act, basis of a major portion of the commission's work, was amended by the Wheeler-Lea act in 1938 to include the prohibition of unfair or deceptive acts in commerce, in addition to unfair methods of competition theretofore prohibited. It also specifically made unlawful the dissemination of false advertisements of food, drugs, cosmetics and curative devices.

In 1937 the commission began enforcement of the Robinson-Patman act of 1936, amending the Clayton act by restating and expanding the basic principle of prohibiting price and other discriminations injuriously affecting competition. Other sections of the Clayton act enforced by the commission were directed against specific devices tending to create monopoly or lessen competition such as exclusive-dealing contracts and certain capital stock acquisitions.

The Wool Products Labeling act, effective in 1941, prohibited misbranding and required informative labelling of wool merchandise. As empowered, rules and regulations for its enforcement and guidance to industry mem-

bers were promulgated. Continuous administrative compliance work thereunder involved inspections, examinations and correction of labelling practices.

During 1937-46 the commission annually issued an average of 258 complaints alleging violation of laws administered by it, and 227 orders to cease and desist from such violations. Over the same period it accepted annually an average of 444 stipulations wherein respondents agreed to discontinue unlawful practices.

The commission also administered the Export Trade act, permitting the organization, under stated restrictions, of associations engaged exclusively in export. Fifty such associations were registered with the commission in 1946.

In 1944 the commission instituted investigations under this act to determine whether certain associations had engaged in practices violative of law. After concluding investigations of two associations exporting phosphate rock, the commission made recommendations to the effect that they readjust their business to conform to law.

During World War II the commission conducted many special investigations for U.S. war agencies. It surveyed 4,300 companies in 24 critical material industries to ascertain the facts concerning their compliance with War Production board orders governing the allocation of the supply and priorities of delivery of such materials. Commission reports based upon studies of costs, prices and profits in industries such as bread baking, flour milling, biscuit and cracker, steel producing, paperboard and fertilizers provided these agencies with factual data for price stabilization functions. Other reports related to methods and costs of distributing important food products, wearing apparel, petroleum products, rubber tires, electrical household appliances and agricultural implements and to financial data concerning approximately 7,000 industrial corporations operating in 86 principal strategic material industries for 1939-40.

Before and after the war the commission reported to congress on such subjects as agricultural income; labour costs, profits and investment structure in the textile industry; agricultural implements and machinery; distribution policies in the motor vehicle industry; resale price maintenance contracts; milk distribution, prices, spreads and profits; cost of producing and distributing fish in the Great Lakes area, New England and on the Pacific coast; international phosphate cartels; and the wholesale baking industry.

In 1946, the Lanham act (effective July 1947) delegated to the commission important duties in respect to cancellation of registered trade marks.

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Federal Works Agency

At the beginning of the decade which ended with the close of fiscal year 1947, the organizations of the United States government which later were consolidated in the Federal Works agency were engaged, for the most part, in

activities designed to create useful work for the unemployed.

From late 1940 to the surrender of Japan, operations of the agency were centred upon activities in aid of the national defense program, and later of the war program itself. A third phase of federal works evolution, the advance planning of public works, opened shortly before the end of the war.

For the first time in the history of economic depressions, the United States congress, in 1933, had adopted various measures, and voted large appropriations, for the purpose of ameliorating the lot of the unemployed. Among these measures was the National Industrial Recovery act, under which a nation-wide program of public works construction was launched. Later an organization was created to supplement such employment by making work available to the destitute both on construction of public value and on service projects of public usefulness.

These two programs were assigned to the Federal Works agency when that agency was established under President Franklin D. Roosevelt's reorganization plan no. 1 of 1939. Also incorporated in the new agency were all activities having to do with the construction, maintenance and operation of buildings owned and used by the federal government and the assignment of space in them; activities having to do with federal money grants to the states in aid of highway construction and activities concerned with slum clearance and the construction of low-rental housing for low-income workers.

The programs which thus became the responsibility of the Federal Works agency were assigned to organizations under the names of the Public Buildings administration, the Public Roads administration, the United States Housing authority, the Work Projects administration and the Public Works administration. An administrator was appointed to coordinate and supervise the work of these constituents. Later a constituent known as the Bureau of Community Facilities was created by the administrator.

Attacking the Depression.—From its inception in 1933 until its liquidation, the Public Works administration constructed 34.524 projects, ranging in size from a one-room school in Arizona to sewage disposal facilities in Chicago costing approximately \$60,000,000. The total cost of all PWA construction was \$6,128,757,391, toward which the federal government advanced \$3,346,059,543 in grants and \$810,327,627 in loans. The 1emainder was contributed by the benefiting communities.

Prevailing wages were paid on these operations, and peak employment was reached in July 1934, with 650,653 at work at construction sites, and an estimated 1,200,000 employed off the sites in mines, factories and on the railroads in the production and transportation of the needed materials. By May 1941, shortly before liquidation of the administration had begun, only 11,000 were employed at construction sites. By Jan. 1, 1947, liquidation had been completed except for a few projects involved in litigation or for which necessary materials could not be obtained.

The Work Projects Administration, unlike PWA, paid only subsistence wages and applied a means test to project workers. From its inception in 1934 until its liquidation June 30, 1943, WPA assisted in financing 1,368,363 projects on which a total of 8,000,000 separate individuals were given employment. The projects covered a wide range of manual and intellectual activities, including building construction, road construction, the writing of guide books, teaching and economic research. Total federal appropriations for the program were \$10,875,449,892

of which approximately \$107,000,000 in unexpended funds, and materials and equipment valued at \$22,000,000, were returned to the treasury at the conclusion of the program.

Co-operating in these programs of work relief were the Public Roads and Public Buildings administrations and the United States Housing authority. Several hundred public buildings, principally post offices, and many hundreds of miles of highways were built with funds allotted from emergency fund appropriations.

Although slum clearance and the construction of lowrental housing were the primary functions of the United States Housing authority (established in 1938), the operations of that organization did, of course, provide a large volume of employment (52,814 were working at the sites in Sept. 1940).

All housing functions of Federal Works agency were transferred to the National Housing agency when that organization was created by executive order Feb. 24, 1942. Prior to that time the United States Housing authority had constructed 132,650 dwelling units in 399 projects in 37 states at a cost of about \$500,000,000. In 1941 the average rental per dwelling unit ranged from \$14.28 to \$21.10, depending upon geographical location. The rental price included the cost of such utility services as water, gas and electricity.

Aid to the War Effort.—Under the impact of war in Europe and preparation for war at home, the huge labour surpluses of the preceding decade of the 1930s were turning, by 1940, into labour shortages in many areas. As the manufacture of aeroplanes, ships and munitions of war expanded, thousands of communities rapidly grew in population and many entirely new communities arose. In all these places an acute housing shortage quickly developed. By late summer of 1940 thousands of war workers and their families were living in tents, trailers or abandoned buildings, and many were commuting to work a distance of 50 mi. or more.

To relieve this acute need for housing, congress, in Oct. 1940, enacted the Lanham act (public law no. 849, 76th congress) authorizing the Federal Works administrator to construct, or otherwise provide, housing for war workers and the military. The following June the act was amended to assign to the administrator responsibility for providing public works—such as sewers, water works, schools, hospitals and police and fire protection—when the failure to provide them would impair production for war, in communities which themselves were unable to finance them without an excessive increase in taxes or an excessive increase in bonded indebtedness. The act also authorized the administrator to grant financial assistance, where necessary, for the maintenance and operation of such facilities.

Prior to the transfer to the National Housing agency of all federal activities having to do with housing, the Federal Works agency had completed 61,199 dwelling units, had 91,478 units under construction and had assigned 159,258 additional units for construction.

The agency retained the Lanham act public works program which was administered in separate divisions of the office of the administrator until Jan. 1, 1945, when the program was assigned to the newly created bureau of community facilities.

Retween July 1, 1941, and the surrender of Japan in Aug. 1945, 4,062 public works construction projects were approved under the Lanham act at a total estimated cost of \$457,734,926. Of the estimated cost, \$361,828,131 was represented by federal funds while \$95,906,795 was con-

tributed by the sponsoring communities. The program included 1,144 new school buildings, 872 hospitals, 460 water-supply projects, 444 sewer projects, 725 recreation projects, 160 fire and police stations, 90 buildings for child care and 80 miscellaneous projects.

U.S. entry into the war found over-crowded communities lacking many facilities essential to well-ordered community life and no less lacking in financial resources to maintain and operate some already existing facilities and those acquired during the war. Public school systems especially were confronted with excessive demands upon their resources as the children of newly-arrived war workers crowded into the classrooms. Of \$120,165,151 granted in federal funds for the support of 3,056 maintenance and operation projects of all types, \$40,809,733 was allotted to overcome school deficits.

As the shortage of male labour became more and more critical, government and industry appealed to women to enter munitions factories. Young married women were reluctant to accept employment outside the home unless some provision could be made for the care of their young children during working hours. Makeshift arrangements made by the mothers themselves too often proved inadequate. To enable these women to remain on the job, 830 child-care projects were established in as many cities and supported from fees paid by parents for services rendered, from community contributions, and from \$52,942,954 in federal grants. Federal support was withdrawn from the child-care program March 1, 1946, but contributions for the operation of regular school programs were continued through the remainder of the school year.

To assist in the maintenance and operation of 98 hospitals a total of \$16,510,395 in Lanham act funds was granted, while recreation projects received \$7,639,933 in assistance, fire and police protection \$1,534,937 and miscellaneous municipal services \$727,139.

To accommodate rapidly expanding governmental war agencies, 28 temporary office buildings were constructed in the District of Columbia by the Public Buildings administration, which also erected and managed for the account of the Federal Public Housing authority 18 dormitories in four groups for 10,721 female employees of the government. Office space rented and assigned throughout the country and in the District of Columbia by the Public Buildings administration for government agencies increased from 73,798,047 sq.ft. in 1940 to 226,014,916 sq.ft. in 1944.

In a further effort to relieve congestion in Washington, the Public Buildings administration removed 57 federal agencies, or parts of agencies, and 16,771 of their employees and their household and personal effects, to locations in 57 cities in 32 different states.

Advance Public Works Planning.—A totally new approach to the use of public works construction as a means of providing needed employment at the onset of a depression became possible in 1945 when, under the authority of Title V of the War Mobilization and Reconversion act of 1944, the Federal Works agency began advancing federal funds to the states and their political subdivisions to help finance the detailed planning of public works. The need for such a program had been demonstrated in 1933, when an immediate full-scale attack upon unemployment proved impossible because very few detailed working drawings and specifications for public construction were available. Many months elapsed, during which unemployment increased, while architects and engineers were preparing the

plans without which no men could be given employment at construction sites.

To finance the preparation of a nation-wide shelf of public works plans as authorized by the War Mobilization and Reconversion act of 1944, congress had appropriated \$65,000,000 by July 1, 1946. The law required that 90% of the available funds be allotted among the states in proportion to population, provided that not less than onehalf of one per cent of the total amount available be allotted to any one state, while 10% could be allotted in the discretion of the administrator. Advances were to be repaid without interest when the actual construction of works so planned was begun. By early autumn, 1946, approximately half of the available funds had been allotted for the planning of specific local projects with an estimated construction cost in excess of \$1,000,000,000.

The Public Buildings administration and the post office department jointly listed a need for approximately 4,000 additional federal buildings, principally post offices, but also including government office buildings, court buildings, quarantine and border patrol stations, customs houses, garages and other structures. Construction labour and many types of materials were still in short supply, however, and precedence was given, as a matter of federal policy, to the construction of homes for war veterans. Accordingly, construction of all but a few of the federal buildings proposed was deferred, but detailed plans were being prepared wherever possible. It was expected, therefore, that at the threat of another depression plans for federal, state and local construction would be ready to throw into the breach to help check rising unemployment. By timing public construction to coincide with a slackening of private construction it was believed that the construction industry, normally accounting for more than ten per cent of the national income but traditionally subject to violent fluctuations, could be partially stabilized.

Additional Programs.-The so-called G.I. Bill of Rights held forth to veterans of World War II the promise of further education, largely at government expense. Beginning in Sept. 1945, however, colleges and universities throughout the country were turning away veteran applicants for admission because of lack of classrooms, laboratory space and other educational facilities. In Aug. 1946, congress appropriated \$75,000,000 to the Federal Works agency to be used in disassembling and transporting surplus military buildings to college campuses to be reassembled for educational use. This program was proceeding rapidly through the 1946-47 academic year.

Contracts were let in 1946 for the initial projects of a \$10,000,000 improvement program for the Virgin Islands assigned to the agency by congress. This program included highways and roads, sanitation and fire-protection facilities, public markets and an abattoir and cooling plant facilities. (See also Housing.) (P. B. F.)

Federated Malay States See MALAYAN UNION.

Federation of Labor, American

See LABOUR UNIONS; SOCIETIES AND ASSOCIATIONS; STRIKES AND LOCK-OUTS.

Feldspar

The production of feldspar in the chief producing countries of the world is shown in Table I.

ı	Short tons)			
1937	1939	1941	1943	1945
 4.325	4.981	6,290	7.455	ş
 21,689	12,463	26,040	23,880	28,047

047
320

A number of other countries produced amounts varying from a few hundred to a few thousand tons, and no data were available from several others, of which Czechoslovakia was probably the most important, with an output of some 30,000-35,000 tons.

The bulk of the feldspar continued to be produced and consumed in the United States, the outputs of other countries being small in comparison. Except for declines in 1938 and 1942-1944, production expanded continuously. The chief reason for the increase was the growing demand in the glass industry. In 1937, the glass industry used 142,-028 tons of feldspar and the pottery industry 102,346 tons (51% and 37% respectively of total consumption); in 1945 the glass industry required 249,927 tons, as compared with 111,695 tons for pottery (66% and 29% respectively of total consumption). This heavy increase in the demand for feldspar in glass making developed side-by-side with a similar increase in the use of other minerals (nepheline syenite, aplite and volcanic ash) for the same purpose, that is, the introduction of alumina into the composition. During the same time other uses for feldspar declined from 35,000 tons a year to 20,000 tons. The bulk of the United States consumption continued to be supplied by the domestic output, only relatively small amounts being imported, usually all from Canada. Small tonnages of Cornwall stone imported from Great Britain gave some promise of replacing feldspar in some uses. (G. A. Ro.)

Table II.—Data of the Feldspar Industry in the United States (Short tons)

	1937	1939	1941	1943	1945
Crude, sales	300.756	283,871	379,523	345,162	417,820
Imports	14,511	8,355	12,603	12,049	16,715
Ground, sales	279,272	259,194	354,417	335,810	381,728
Glass	142,028	138.336	182,878	214,668	249.927
Pottery	102,346	87,209	127,140	97,887	111.695
Enamel	25,111	28,356	34,841	7.147	13,755
Other ceramics	6.442	2,132	563	1,261	1,747
Other uses	3,345	3,161	8,995	14.847	4,604

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Fencing

The year 1936 had seen the most colourful Olympic games held until that time and, in the fencing events, the greatest number of participating nations of any tournament. Italy and Hungary starred, with the former winning the team and individual events in foil and épée, and the Hungarians winning the team and individual in sabre and the women's individual. The United States team was eliminated in the semi-finals of each weapon. In each event they placed third in their pool of four teams. However, they gained valuable experience with which to improve fencing in the United States.

The years between the '36 Olympic games and prior to World War II were the boom years in United States fencing. Hundreds of high schools and colleges added fencing to their varsity sports. In the east a new intercollegiate group formed a league and held an annual championship; the first tournament attracted representations from 26 colleges. This was in addition to the Inter-collegiate fencing association championship-the Big Ten of the midwest

and the Pacific Coast league. The tournament of this new group later became the annual N.C.A.A. championship. In the Amateur Fencers League of America, 12 new divisions were granted charters, and the national championships attracted a greater number of competitors from the Pacific coast and midwest in each succeeding year.

The enthusiasm of the returning Olympians for international competition manifested itself in 1937, when for the first time a United States team entered the world championships. The experience gained in the Olympics was shown when Col. Thomas Sands, a member of the 1936 U.S. Olympic team, placed 5th in the 1937 world championship held at Paris. At Montreal in 1938 a U.S. team of John Huffman, Miguel de Capriles and Warren

Joanna de Tuscan, champion woman fencer of Detroit, Mich., in a practice bout



U. S. National	Fencing	Champions	1936-46
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	Foil						
	First	Second	Third				
1936	Hugh Alessandroni	Joseph Levis	John Huffman				
1937	Joseph Levis	José de Capriles	Dernell Every				
1938 1939	Dernell Every Norman Lewis	Frank Righeimer Edward Carfagno	Joseph Levis John Huffman				
1940	Dernell Every	Norman Lewis	Warren Dow				
1941	Dean Cetrullo	John Huffman	Silvia Giolita				
1942	Warren Dow	John Huffman	Silvio Giolito				
1943 1944	Warren Dow Alfred Snyder	Alfred Snyder Warren Dow	Robert Kaplan Curt Ettinger				
1945	Dernell Every	Alfred Snyder	Warren Dow				
1946	José de Capriles	Nathaniel Lubell	Dernell Every				
		Épée					
1936	Gustave Heiss	José de Capriles	Andrew Boyd				
1937	Thomas Sands	Tracy Jaeckel	Andrew Boyd				
1938	José de Capriles	William Randali	Fred Linkmeyer				
1939	Loyall Tingley	Andrew Boyd	Gustave Heiss				
1940	Fred Seibert	Alfred Skrobisch	Loyall Tingley				
1941 1942	Gustave Heiss Henrique Santos	Marvin Metzger Robert Driscoll	Andrew Boyd Fred Linkmeyer				
943	Robert Driscoll	Gregory Flynn	August von Munchhaussen				
1944	Miguel de Capriles	Pieter Mijer	James Flynn				
1945	Mack Gilman	James Flynn	Fred Linkmeyer				
1946	Albert Wolfe	José de Capriles	Tracy Jaeckel				
		Sabre					
1936	Norman Armitage	Peter Bruder	John Huffman				
1937 1938	John Huffman John Huffman	José de Capriles Norman Armitage	Norman Armitage Miguel de Capriles				
1939	Norman Armitage	John Huffman	Miguel de Capriles				
1940	Norman Armitage	John Huffman	Miguel de Capriles				
1941	Norman Armitage	John Huffman	Tibor Nyilas				
1942	Norman Armitage	James Flynn Tibor Nyilas	Tibor Nyilas George Worth				
1943 1944	Norman Armitage Tibor Nyilas	Norman Armitage	Miguel de Capriles				
1945	Norman Armitage	James Flynn	Tibor Nyilas				
1946	Tibor Nyilas	Norman Armitage	José de Capriles				
		Women's Foil					
1936	Joanna de Tuscan	Marion Lloyd	Dorothy Locke				
193 <i>7</i> 1938	Helene Mayer	Carol Alessandroni	Dolly Funke				
1938	Helene Mayer Helene Mayer	Dorothy Locke Madeline Dalton	Maria Cerra Jarmilla Vokral				
1940	Helena Mroczkowska	Marion (Lloyd) Vince	Mildred Stewart				
1941	Helene Mayer	Marion (Lloyd) Vince	Maria Cerra				
1942	Helene Mayer	Madeline Dalton	Helena Mroczkowska				
1943	Helena Mroczkowska Wadeline Dalton	Ruth Maxwell	Maria Cerra Helena (Mroczkowska)				
1944	wadeline Dalton	Dorothy Lancaster	Dow				
1945	Maria Cerra	Helena (Mroczkowska) Dow	Madeline Dalton				
1946	Helene Mayer	Heiena (Mroczkowska) Dow	Ruth Maxwell				
		U.S. Olympic Team 1936					
	lessandroni	Tracy Jaeckel	Joanna de Tuscan				
Norma	n Armitage	Joseph Levis	Marion Lloyd				
Andrev Peter B		Bela Nagy William Peçora	Dorothy Locke				
	Capriles	John Potter					
Miguel	de Capriles	Frank Righeimer					
Warre		Thomas Sands					
Gustav John Hu	e Heiss	Samuel Stewart Frederich Weber					
John Hu							
		U.S. Olympic Team 1940					
		(Officially appointed)					
Norm -	Armitage	John Huffman	Helena Mroczkowska				
José de	n Armitage Capriles	Norman Lewis	Mildred Stewart				
Miguel	de Capriles	Raiph Marson					
Edward	l Carfagno	Fred Seibert					
Warrer Dernell		Alfred Skrobisch Loyall Tingley					
remell	E 1 C 1 7	Loyun inigicy					

Dow (alternate) defeated a Canadian team of George Otis and Henry Silvestore, 11-1, in the first round of the International match for the Russell trophy. Later in the same year a team of John Huffman, Warren Dow, Miguel de Capriles and José de Capriles defeated a Cuban team of Eugenio Garata, Carlos Lamarr, Eugenio Sardina and Diosdado del Pozo, two matches to one, for the Col. Batista International Épée Team trophy. The United States team also defeated the Cuban team in the second round of the Russell trophy International tournament 7-5. Both matches were held at Havana, Cuba.

The first retrogression in international competition came when the United States-British quadrennial match for the Col. Thompson International trophy was postponed in 1938. This match had started in 1921 and had been held in 1923 and 1926 and then on a four-year basis until 1938. The United States had won four of the five competitions held. The shadow of war was becoming evident in

Europe as several European countries refused to compete in the 1938 world championships for political reasons. Therefore, the results of the competition were hardly indicative of world championship fencing. In 1939 the United States team defeated the Cuban team the second time for the Col. Batista Trophy, two matches to one. Also in 1939 the United States championships were held in San Francisco. This was the first time they were held away from New York.

With the war in Europe forcing the abandonment of fencing (except for a few tournaments in Germany, Italy and Hungary) most of the fencing was centred in the United States until U.S. involvement in the war caused a necessary curtailment. Throughout the war years fencing competitions were held, and the United States championships were attended by those who remained or could get leave from the service.

The abandoning of the 1940 Olympic games was a blow to United States fencing enthusiasts who had continued to hope for an early peace. However, they continued with their training plans, and an official Olympic team was selected as had been done in many of the other sports.

After the war, fencing was resumed with great activity in the United States and Europe (Germany excepted, where it was banned by military decree). In all fencing countries, preparations were being made for participation in the 1948 Olympic games. (W. A. Dw.)

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Fernando Po

See Spanish Colonial Empire.

Fertilizers

World War II caused abandonment of the reasonably good international statistics built up prior to 1939. For many years the International Institute of Agriculture at Rome, in its International Year Book of Agricultural Statistics, last issued in 1940, provided the best comparable information concerning fertilizers. This source was interrupted by termination of the institute and absorption of its work by the Food and Agriculture organization (F.A.O.), a subordinate body of the United Nations. As a result, comparisons covering the years 1939-45 for most countries were based upon incomplete information and reports of observers who investigated the situation, especially in connection with international reconstruction or relief. Discussion and tables were confined largely to comparisons between prewar averages (1936-38), and the year 1945-46. When data in the accompanying tables for the immediate prewar years are not available, nearby years are used. Prewar figures usually include the soviet union; postwar figures do not.

World Consumption of Plant Food.-Prior to World War II, world consumption of fertilizers and fertilizer materials was about 59,000,000 tons. It is impossible to give a statistically-based total for any year of the decade after 1938, but the Committee on Fertilizers of the Combined Food Board stated that it allocated approximately 40,000,000 tons of fertilizers of all kinds in 1945-46.

Totals and details for selected countries of prewar annual consumption of plant food, as estimated by K. G. Clark and Mildred S. Sherman of the U.S. department of agriculture, are shown in Table I.

Table 1.—Prewar Consumption of Plant Food in Selected Countries*

Country	Nitrogen	Phosphoric Acid	Potash	Total
Canada	16,200	37,500	24,900	78,600
Chile	10,700	6,600	0	17,300
France	170,600	389,300†	289,200	849,100
Germany	629,700	731,900†	1,047,500	2,409,100
Italy	128,100	241,900	16,000	386,000
Japan	278,600	279,800	112,200	670,600
Netherlands	68,400	111,200	184,500	364,100
Norway	7,900	15,900	16,800	40,600
Soviet Union	154,200	426,100	163,300	743,600
United Kingdom	56,000	198,900	83,400	338,300
United States	368,700	744,100	389,400	1,502,200
Total, 11 countries	1,889,000	3,183,200	2,327,100	7,399,300
All other countries	790,000	1,161,000	473,400	2,424,400
World average	2,679,000	4,344,200	2,800,500	9,823,700

*Converted from metric source figures to short tons. †Partly from basic slag.

The percentages of the world's prewar production of plant food by continents, as estimated by Clark and Sherman, are shown in Table II.

Table II.—Prewar Percentages of World Production of Plant Food, by Continents

Continent	Nitrogen N	Phosphoric Acid P ₂ O ₅	Potash K ₂ O
Europe	59.0%	62.7%	77.9%
Asia	19.3	7.7	4.6
North America	15.2	18.1	15.4
Africa	3.9		
South America	2.6		
Oceania		8.9	
Africa and South America		2.6	
Africa, South America, and Oceania			2.1

F.A.O. estimates of consumption of the three major plant foods during 1945-46 for the world and selected countries are shown in Table III. Credit for these estimates was due largely to Dr. Oliver E. Overseth, U.S. department of agriculture.

Table III.—Postwar Consumption of Plant Food in Selected Countries*

Country	Nitrogen	Phosphoric Acid	Potash	Total
Canada	20,700	74,900	47,900	143,600
Chile	8,900	21,200†	11,000	41,100
France	172,400	239,400‡	330,600	742,300
Germany	137,500	149,900‡	683,200	970,600
Italy	50,700	33,900	5,500	90,100
Japan	104,700	49,600	2,200	156,500
Netherlands	83,100	79,100	73,500	235,700
Norway	23,300	27,600 4	27,600	78,400
Soviet Union		<u></u>		
United Kingdom	186,300	386,300	139,700	712,300
United States	680,600 8	1,421,500	697,600[2,799,600
Total, 11 countries	1,468,200	2,483,200	2,018,900	5,970,300
All other countries	_312,400	905,000	323,100	1,540,500
World total	1,780,600	3,388,200	2,342,000	7,510,800

*Converted from metric source figures to short tons.
†Estimate based on 1943 consumption of 68,429 metric tons of domestic apatite, ontaining 28% P20s.
‡Partly from basic slag.
§Includes Hawaii and Puerto Rico.

|Estimate apparently based on 1944–45 performance.

Fertilizer consumption fell off greatly in the war-ravaged countries, and increased greatly in most areas that were not overrun or subjected to "scorching." Examples are given in Table IV.

	table IV.—retilizer Consumption Losses and Gains, 1945–46										
	Nitr	ogen			Phospho	oric Acid	1	Potash			
Country Germany Japan China, including Formosa and Manchuria Spain and	Losses 493,000 173,900 97,000	Country United States . United Kingdom India Norway Netherlands . Sweden	Gains 311,900 130,400 24,800 15,200 14,700 11,500	Country Germany	Losses 582,100 230,200 207,900 150,000	Country United States . United Kingdom Canada New Zealand . West Indies and Latin	Gains 677,400 187,300 37,500 18,100	Country Germany Japan Netherlands .	Losses 364,200 108,900 111,000	Country United States . Spain United Kingdom France Canada	Gains 308,100 73,100 56,300 41,400 23,000
possessions . Italy Egypt Total	93,600 77,100 28,400 963,000	Total	4,500	Netherlands . Asia	32,100 307,200 ,654,500	America Total	961,500	Total	584,100	Total	501,900

Table IV Fratilism Comment

Canada.—With a consumption of 20,700 tons of nitrogen, Canada had three privately-owned and three government-owned nitrogen fixation plants with a total capacity of 250,800 tons yearly. The outstanding wartime development was the great growth of nitrogen production from the prewar average of 51,500 tons, mostly as calcium cyanamide, to 199,500 tons in 1945–46, mostly as ammonium nitrate.

The first ammonium nitrate available for agriculture appeared in 1943. The surplus over munition and other industrial needs rose to 185,105 tons of the material in 1944–45. Considering its 60,000,000 ac. of cultivated land, Canada was a small user of fertilizer. Sales for home use in 1944–45 were about 500.000 tons, whereas United States consumption for the calendar year 1945 was 13,202,000 tons.

Chile.—Chile remained the world's greatest producer of sodium nitrate (15.5% nitrogen). In 1937, production was 1,584,000 tons, and in the year 1945–46 was about 1,650,000 tons.

United States imports in the calendar year 1945 were 849,888 tons.

From 1941 to 1944, Chilean technicians and labourers installed a plant using the Norwegian "Krystal" process, new to Chile. Chile's problem in the postwar nitrogen world was to retain its market for the natural product in competition with the great synthetic capacity.

Chilean nitrate refinery, near Tocopilla. Huge leaching vats are shown in the foreground

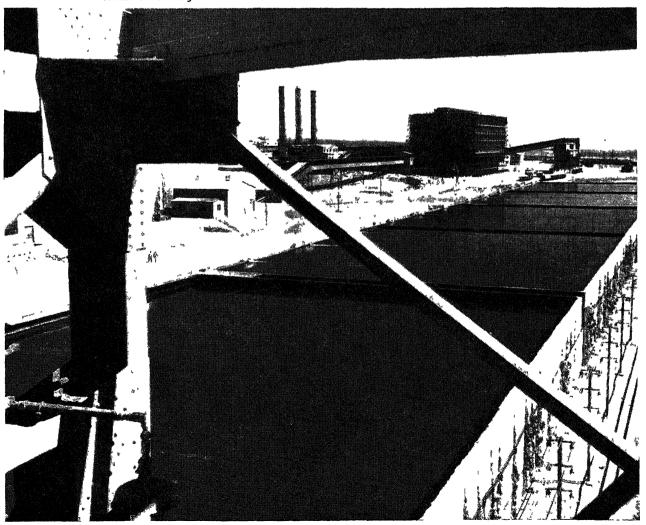
Germany.—Up to World War II, Germany led the world in fertilizer consumption, ranking first in nitrogen and in potash, and second only to the United States in phosphoric acid.

Germany originated both the cyanamide and the direct synthesis process of nitrogen fixation. In 1937, its 13 plants had a capacity of 1.505,000 tons of nitrogen. Wartime bombing, lack of coal and other materials, inefficiency of labour and other factors caused the 1945–46 production to decline to 137,500 tons.

Prewar consumption of phosphoric acid was about 732.-000 tons, obtained from basic slag and superphosphate. In 1945–46, consumption was approximately 150,000 tons. Basic slag contained approximately 28% P₂O₅, and prewar Germany's production (1937), consumed as fertilizer, was 2 980.000 tons of a world production of 6,010,000 tons.

Germany originated the modern potash industry and became the largest producer and consumer. While average prewar consumption was 1,047,500 tons, a likely estimate was that 1945–46 consumption amounted to about 660,000 tons, although some estimates ran higher (see Table III). Sixty-one per cent of German mining capacity was in the Russian zone of occupation. 22 in the British, 14 in the United States and 3 in the French.

Japan.—Precise knowledge of the postwar fertilizer situation in Japan was meagre. Fertilizers continued to be vital to that country, where some 72,000,000 people



relied primarily upon about 23,300 sq. mi. of arable land. Population per arable square mile in Japan was more than 3,100 persons, the densest in the world. Japan had about 14,902,000 arable acres, while the United States, with a population of approximately 140,000,000, had about 360,000,000 ac. under actual cultivation.

Japan's prewar nitrogen fixation capacity was about 550,000 tons, and it stood third in nitrogen fertilizer consumption. In 1945, production was less than 330,000 tons because of war damage to plants and lack of materials.

The total customary prewar consumption of plant foods in terms of N, P_2O_5 and K_2O was 670,000 tons. Consumption in 1946 was estimated at 156,500 tons. Of the 1946 consumption, only 2,200 tons was K_2O compared with a prewar average of 112,200 tons.

Soviet Union.—With more than 553,000,000 ac. of arable land, Russia consumed only 2.68 pounds of plant food per acre in the pre-World War II period. The Council for Collective Farm Affairs stated in 1946 that Russia had more than 1,000,000,000 ac. in farms. There was little specific information concerning developments in Russia after the outbreak of World War II.

Prewar production of nitrogen averaged 154,000 tons, all no doubt used domestically. Whether new plants were built during World War II was not known, but more than two-fifths, amounting to about 625,000 tons, of Germany's prewar capacity was located in the Russian zone. This included Leuna, the largest nitrogen fixation plant in the world.

European Russia's phosphate deposits were estimated at 6,060,000,000 tons, the Kola peninsula alone having more than 2,200,000,000 tons of these reserves. Kola apatite averaged about 30% phosphoric acid.

It had long been known that Russia had important deposits of potash salts, but soviet officials claimed that their country, because of new discoveries, had reserves estimated at 20,275,000,000 tons of potash. Formerly the German reserves of 2,975,000,000 tons K₂O were considered the largest in the world. The most important newly-discovered deposits were near Solikamsk in European Russia, west of the Urals, a region where explorations had been carried on for a number of years. In addition to its own potash deposits, 61% of German potash mining capacity and practically the whole Polish capacity came into Russian possession after World War II.

United States.—During the later war years the United States led the world in production and consumption of plant food. This explained in part the bumper food and feed crops shared with other nations during and after the war. Foods and fibres were a vital part of the \$30,000,000,000 worth of lend-lease materials sent to the United Kingdom, the \$11,000,000,000 worth sent to Russia and the large amounts sent to other countries.

Prewar apparent U.S. consumption of plant food was 1502,200 tons, while in 1945-46 it was 2,799,600 tons. In comparison, prewar German consumption was 2,409,100 tons; a realistic estimate of 1945-46 consumption was 970,600 tons. The quantity used by Germany in the prewar period was somewhat startling, as the reich had an area only two and one-half times that of Kansas.

In 1937, U.S. consumption of mixed fertilizer and fertilizer materials was 8,226,000 tons. It dropped back to 7,548,000 tons in 1938, and then rose steadily to between 13,750,000 and 14,000,000 tons in 1946. The average plant food content in 1945 was about 21%.

In addition to domestic nitrogen, U.S. at the end of the decade 1937–46 was the largest user of Chilean nitrate of soda. Imports had averaged about 125,000 tons, which could readily be increased to 150,000 tons or more.

The following tabulation compares U.S. domestic status prewar and postwar:

	Synthetic Nitrogen Plants		All Forms of Nitrogen			
Year	Number*	Capacity	Production	Consumption		
		tons	tons	tons		
1937	10	322,350	249,500	390,300		
1945-46	3 19	1,520,000	547,000	680,000†		

*In 1937 all plants were privately owned. For 1945-46 the figures include 9 private and 10 government-owned synthetic plants. In both years some small plants of negligible capacity are omitted.

†Includes Hawaii and Puerto Rico.

For more than 70 years America had led the world in phosphate rock production. In 1937 it was 4,771,000 tons, and in 1945 it was 6,504,000 tons. Prewar consumption was about 3,300,000 tons, and 1945 consumption 6,160,000 tons. Exports and stockpiling accounted for the differences. As the United States assisted in rehabilitating the phosphate rock industry of French North Africa, it is interesting to compare African prewar and postwar production with the figures given above. North African prewar production was 4,125,000 tons, while 1945–46 production was estimated at 4,800,000 tons.

In 1937, consumption of superphosphate was 4,434,000 tons, while in 1945 it was 5,295,472 tons.

The potash industry of the United States made phenomenal progress. Its development and its performance, especially during World War II, redounded greatly to the credit of private enterprise. According to the bureau of foreign and domestic commerce, production in 1927 was 43,510 tons, and imports were 224,973 tons. In 1937, production was 284,497 tons, and imports were 319,743 tons. In 1945-46 (June 1945-May 1946), according to the American Potash institute, total deliveries from domestic production were 908,976 tons. There were no imports. Total deliveries for agricultural use in United States were 741,855 tons, and shipments for use in Canada, Puerto Rico, Hawaii and Cuba totalled 79,827 tons. Approximately 60% went to Canada. Exports to other countries were 13,049 tons, and deliveries for industrial use 74,436 tons.

The 1937 census showed 743 fertilizer plants in the United States with sales in excess of \$5,000. There were about 20,900 wage earners, and the retail value of the fertilizer bought by the farmer was estimated at \$228,000,000. Census figures were unavailable for 1945, but there were probably no fewer than 850 plants and about 22,600 wage earners. Fertilizers produced cost the farmer at retail about \$440,000,000.

Fertilizers remained the cheapest commodity the U.S. farmer could buy for use in his production operations. Consistently after World War I, excepting only the period of the great depression in the early 1930s, the average price was below that of farm products and all commodities.

When the average of prices for the calendar years 1935 to 1939 is taken as 100, the index number of prices of fertilizers on Oct. 12, 1946, was 124.3; of all fertilizer materials combined, 122.5; of farm products at the farm, 218.2; while that of all commodities included in the National Fertilizer association's weekly index was 174.4.

U.S. Wartime Control.—Controls in the United States began with rationing of nitrate of soda in Jan. 1942, about two months after the Japanese attack on Pearl Harbor.

After consultation with the executive officer of the National Fertilizer association, an industry advisory committee of 16 members was appointed by the secretary of agriculture, and later was taken over by the War Food Administration. When the War Production Board, the Office of Price Administration, and other agencies and subordinate units were created, similar advisory committees were set up for each of them. Working arrangements were also maintained with the Office of Defense Transportation and the U.S. maritime commission. Effective co-operation was maintained by selecting outstanding members of the industry to serve on these committees. Government officials used the only nation-wide organizations in the industry, the National Fertilizer association and the American Potash institute, to assist them in accomplishing equitable distribution and fair pricing consistent with the farm production goals set up from year to year by the U.S. department of agriculture. Regular channels of distribution were used, and no attempt was made to ration fertilizer to farmers.

Maximum prices of nitrogen carriers, effective March 1942, were based on the average prevailing between Oct. 1 and Oct. 15, 1941. Maximum prices for retail sale of mixed fertilizers, superphosphate, and potash, based on price levels of Feb. 16 to 20, 1942, were put into effect in April 1942. To conserve fertilizers and fertilizer materials, specific lists of "approved" grades that might be used were issued, effective in Sept. 1942, and manufacturers were required to produce grades selected from these lists and no others.

Allocations, price ceilings and controls, approved grades and regulations covering other matters, adapted to the operations of the industry and the needs of the farmer, and changed from time to time when required, were continued until after the end of the war. By Nov. 1945, most controls except maximum retail prices to farmers had been removed. As of Oct. 1946, some price regulations were still in effect, as was allocation of potash and nitrogen.

Technical Advances.—Specific progressive developments in the United States during the decade 1937-46 included the following:

Great extension of the more efficient contact process for making sulphuric acid, rapidly superseding the old chamber process.

Production of granulated superphosphate containing 20-21% of available P_2O_5 instead of $18\%-19\frac{1}{2}\%$.

Widened use of starter solutions which cause transplanted crops like tomatoes, tobacco and others, to resume growth without loss of time after transplantation.

Consistent progress in increasing the use of more concentrated fertilizer mixtures and in devising new mixtures for specific purposes. Many chemical problems were solved, involving the reactions of the materials used in old and new mixtures. The increase of average plant food content of mixed fertilizers was from 18.86% in 1937 to 21.3% in 1944.

Perfection of processes and completion of their installation for making 60%–62% K_2O muriate of potash. Two U.S. producers used the fractional crystallization principle, and three used the flotation principle. The fractional crystallization process originated from earlier research by the bureau of soils, U.S. department of agriculture. Sixty per cent concentration largely displaced the 50% muriate of the days when almost all potash used in the United States was imported. Development of processes and their commercial operation for production of sulphate of potash from lake brines and saline minerals, and of sulphate of potash-magnesia from saline materials.

Reduced cost of producing ammonia by utilizing cheaper sources of hydrogen in synthesis, for example, natural gas. This applied particularly to certain of the wartime government plants which in the postwar period were making nitrogen for agriculture under private operators.

Large-scale conversion of synthetic ammonia into ammonium nitrate fertilizer containing 32.5%—33.5% nitrogen, together with the devising of practical economic methods for producing a non-caking, free-flowing material. No solid ammonium nitrate was used as such for fertilizer prior to 1943 in the United States or elsewhere. In the calendar year 1945 United States consumption was 271,000 short tons of 32.5%—33.5% material. This progress was due to the co-operation of United States and Canadian investigators, and to the help of the participating industrial units.

Improvement of methods of using nitrogen solutions in the ammoniation of superphosphate, and ammonia solutions of urea containing 37%-45% total nitrogen, and of ammonium nitrate containing 37%-41%. The development of these solutions was strictly a private industry accomplishment. The total quantity of nitrogen used in the form of urea and ammonium nitrate solutions amounted to 140,000 tons and 91,000 tons in the years ended June 30, 1944 and 1945, respectively. These figures include small quantities of anhydrous ammonia and ammonia liquor added to irrigation water and used in mixed fertilizers.

Formulation of fertilizer mixtures, neutral in reaction, which could slow down or prevent increase of soil acidity.

Increased use of the secondary elements, calcium, magnesium and sulphur, where soils and crops required them. Calcium and magnesium were added largely by the use of ground limestone containing those elements.

Greatly increased attention to the occasional need for the minor elements, manganese, boron, copper, zinc, iron, cobalt, molybdenum, etc. There was doubt whether cobalt, tin, vanadium and iron were essential for plant growth, although they are often present in crop plants.

Improved methods of application and machinery for applying fertilizer to soils and crops.

Addition of plant food to irrigation water, limited mostly to nitrogen compounds, chiefly anhydrous ammonia, and to liquid phosphoric acid. The addition of sulphur dioxide to irrigation water for the purpose of reducing the pH value of alkaline soils was developing on a small scale.

Outstanding advances in the manufacture of elemental phosphorus for conversion into fertilizers and technical chemicals. During World War II, much of the output of phosphorus was used for military purposes—incendiary bombs, smoke screens, etc.

Development and commercial operation of processes for the manufacture of alpha tricalcium phosphate. These involved the heating of phosphate rock at high temperatures in the presence of silica and water vapour, whereby the fluorine in the rock was volatilized and alpha tricalcium phosphate, suitable for use as fertilizer and as a phosphorus supplement in animal feeds, was produced. The basic laboratory research on this process was done in the department of agriculture, while the Tennessee Valley authority and private industry perfected the large-scale operations.

Notable technological advances in the manufacture of double superphosphate containing 45%-50% of available phosphoric acid. Production of double superphosphate

increased from 91,000 tons in 1935 to 329,000 tons in 1940. The production in 1945 was 251,000 tons.

Large-scale production of calcium metaphosphate containing about 60% of available phosphoric acid, achieved by the Tennessee Valley authority.

Development of a process for the removal of fluorine from superphosphate and its large-scale operation. The process provided a considerable quantity of low-fluorine phosphate suitable for use as a substitute for bone meal in animal feeds.

Production of solid urea containing 42% nitrogen on a large scale and marketing for fertilizer use. (See also AGRICULTURE.)

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FHA (Federal Housing Administration)

See Housing.

FHLB (Federal Home Loan Bank)

See Housing.

Fiction

See American Literature; Belgian Literature; Book Publishing; Canadian Literature: Central European and Balkan Literature; Children's Books; English Literature; French Literature; German Literature; Italian Literature; Literary Prizes; Nobel Prizes; Portuguese Literature; Pulitzer Prizes; Russian Literature; Scandinavian Literature; Spanish-American Literature; Spanish Literature.

Field Sports

See TRACK AND FIELD SPORTS.

Fierlinger, Zdeněk

Fierlinger (1891—), Czechoslovak statesman and diplomat, entered the diplomatic service and held a number of important posts in the new Czechoslovak government formed after World War I. He was his country's minister to the Netherlands, Rumania, the United States and Switzerland and was permanent delegate to the League of Nations in 1928.

Fierlinger was minister to the soviet union in 1937-39 and 1941-42. In 1942, he was named his country's ambassador to the U.S.S.R.

As chairman of the Social Democratic party, Fierlinger was appointed prime minister of the Czechoslovak gov-

ernment April 7, 1945, after President Eduard Benes and other Czech leaders arrived at Kassa, liberated by the soviet armies, to re-establish the government on home soil. Shortly after his appointment, Fierlinger declared that "Slav peoples think it natural that they should group themselves around their great ally, the Soviet Union."

On June 8, 1945, he announced a radical program of social reform at a meeting of the Social-Democrat party in Prague. Cardinal points of his program were the basing of Czechoslovak foreign policy on its alliance with the U.S.S.R., establishing state control over monopolies and big banks, and employing gradual and peaceful measures in carrying out the government program. Other reforms pledged by Fierlinger were stabilization of Czechoslovak currency, the elimination of the power of the large landholders and protection of the interests of the small farmers. After the elections of 1946, Fierlinger resigned and was succeeded July 3, 1946, by Klement Gottwald, a Communist leader.

Fifth Column

See Fascism; Guerrilla Warfare; Psychological Warfare.

Fighting France (Free France)

See France; French Colonial Empire.

Figl, Leopold

Figl (1902—), Austrian statesman, was born Oct. 2, 1902, in Rust, near Vienna. He studied agronomy in Vienna and was director of the Austrian *Bauernbund* (Farmer's party). An opponent of nazidom and *Anschluss*, Figl was arrested by the gestapo and spent about five years in German concentration camps, at Dachau, Mauthausen, Flossenburg and elsewhere. Released in May 1943, he joined the Austrian underground.

After Austria's liberation, he became a member of the Austrian Catholic People's party, rising to chairmanship of the party. Following the national elections of Nov. 26, 1945, in which the Catholic People's party won the majority of seats in the new assembly, Figl was named (Dec. 4) by the Austrian political council to form a new government to succeed the interim regime headed by Chancellor Karl Renner. He was sworn into office on Dec. 20, 1945. The following day, in his inaugural address before the national assembly, he appealed to the occupation powers to reduce the occupation troops to the lowest possible minimum.

In July 1946 he clashed with the soviet occupation authorities over his government's nationalization proposals; the U.S.S.R. asserted that the plans collided with its interests. Figl also denounced soviet seizure of property defined by the U.S.S.R. as having been nazi-owned after the Anschluss, declaring that the soviet definition of the seizure terms was too flexible and included property that was genuinely Austrian and not German.

Figs

See FRUIT.

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See PACIFIC ISLANDS, BRITISH.

Filberts

See Nurs.

Filoff, Bogdan Dimitrov

See PHILOFF, BOGDAN DIMITROV.

See Business Review; Stocks and Bonds.

Fine Arts

See Music; Painting; Sculpture; etc.

Finland

An independent republic of northern Europe, Finland had an area of 134,000 sq.mi. (land area, 121,000 sq.mi.), after cession of 13,500 sq.mi. to the U.S.S.R. in 1940 and again in 1944. Capital, Helsinki; pop. (est. Jan. 1, 1939) 304.965. Other principal cities: Turku (Abo) (74.351); Tampere (76,730). Religion, Lutheran Christian. Population (est. 1940) 3,850,000. Language and nationality, 90% Finnish, 10% Swedish. About 60% are engaged in agriculture, 17% in mining and industry, 3.8% in transportation, 4.3% in commerce, 2% in public administration, 2% in professions, 11% miscellaneous. The density of population in 1940 was 26.1 per sq.mi.

Presidents of Finland during the decade 1937-46 were: Pehr E. Svinhufvud (1931–37); Kyosti Kallió (Feb. 1937– Dec. 1940); Risto H. Ryti (Dec. 1940; re-elected Feb. 1943, resigned Aug. 1, 1944); Carl Gustav von Mannerheim (Aug. 1944-March 1946); and Juho K. Paasikivi (after March 1946). Prime Ministers were as follows: A. K. Cajander (1937-Dec. 1, 1939); Risto Ryti (Dec. 1, 1939-40); J. W. Rangell (1940-43); Edwin Linkomies (1943-Aug. 1, 1944); Antti Hackzell (Aug. 1944-Sept. 1944); Urho J. Castrén (Sept. 1944-Nov. 1944); Juho K. Paasikivi (Nov. 1944-March 1946); Mauno Pekkala (after March 1946). Paasikivi acted as president during Mannerheim's illness in the spring of 1945 and in his absence at the end of the year; he was elected by the Diet as president on March 9, 1946, after Mannerheim's resignation, to serve out the term to March 1950. The Anglo-Soviet Control commission was headed by Col. Gen. A. A. Zhdanov.

Finland's Hope, Pre-1939.—Finland, for many centuries a dependency of Sweden and after 1809 of Russia, had advanced considerably in the 19th and 20th centuries in population, economic well-being and cultural achievement. With the winning of independence at the end of World War I there began a widespread revitalization and flowering of Finnish culture. Runners like Paavo Nurmi, skaters like Klas Thunberg, "Nurmi of the ice-track," established world records and world reputations. Eliel Saarmen, architect of the magnificent railway station in Helsinki, continued his work in the U.S. Jan Sibelius wrote symphonies of power and nationalistic flavour and was recognized as one of the world's great composers. Literature and publishing flourished, and education made rapid strides.

Industry developed and foreign trade expanded. The co-operative movement was an important factor, coming to account for one-third of the domestic trade. Some 7,500 co-operative associations included about three-fourths of the people. In 1936 the two great consumers co-operatives (S.O.K.—Finnish Co-operative Wholesale society and O.T.K.—Co-operative Wholesale association) had a turnover of \$80,000,000 in some 500 stores. There were 700 dairy co-operatives, and the central dairy co-operative handled 95% of Finland's butter exports, most of which went to England. The co-operative credit society was important in the national financial system. Farsighted labour legislation provided for a compulsory eight-hour day, two weeks annual vacation with pay, arbitration boards and such matters as health and accident insurance.

Finland had always been in the position of buffer between east and west, and with independence there came a nationalistic emotion in the defense program. Strong fortifications and a large army were supplemented by a women's defense corps of more than 100,000—the Lotta Svärds—named after a heroine of one of Johan Runeberg's nationalistic tales of war in the east.

The great new future opening up for Finland even inspired a birth rate of 15%, as compared with the all-European rate of 10%.

In 1937 Finland was still essentially optimistic, but by 1938 the handwriting on the wall was all too evident. In May 1938 a seven year defense program was voted by the diet. It was to cost \$60,000,000 and necessitated an increase of 20% in the income tax. In that same month the country celebrated the 20th anniversary of independence. Finland had signed a ten-year nonaggression pact with the U.S.S.R. in 1934, and it maintained hope in that, although it was obvious by the spring of 1939 that Munich had brought no real peace to Europe. In 1940 the Olympic games were to be played in Helsinki, and the Finns went ahead with preparations to entertain the international gathering.

But the clouds over Finland grew darker and darker as the summer of 1939 passed into autumn. The negotiations between the U.S.S.R. and the western powers broke down, the soviets signed an agreement with Germany, the nazis invaded Poland. The soviets then not only marched into eastern Poland, but demanded and obtained special military privileges in Estonia, Latvia and Lithuania. On Oct. 5, 1939, the U.S.S.R. invited a Finnish delegation to come to Moscow to discuss political questions. Finland sent Dr. Juho K. Paasikivi, minister to Sweden and one of the peace delegates of 1920, and (later) V. Tanner, minister of finance. The U.S.S.R. asked a 30-year lease of Hanko, southwest Finnish port, for a soviet naval base and garrison for 5,000 men; it asked for the cession of several different bits of territory near its own borders: some islands in the Gulf of Finland (Hogland [Suursaari], Sei skari, Lavan saari, Tytär saari and Björkö [Koivisto]); part of the Karelian isthmus from Lippola to the village of Björkö; the western part of Fishermen's peninsula (Rybachi) in the district of Petsamo on the Arctic. This was in all about 1,066 sq.mi. in strategic locations, and Finland was to receive as compensation about 2,135 sq.mi. in the region north of Lake Ladoga. The two states were to agree also not to enter any alliances directly or indirectly hostile to the other; there were to be no fortified zones on either side of the Finnish-Russian frontier; Finland might fortify the Aland Islands, but only alone, not with the aid of Sweden or other foreign state.

The Finnish counterproposals (Oct. 25) were conciliatory. They offered cession of most of the islands demanded and an adjustment of the frontier in the Karelian isthmus, and agreed to supplement the nonaggression pact with a political agreement such as requested by the U.S.S.R. Finland rejected outright only the claim to Hanko for a naval base, on the ground that it would not be compatible with Finnish neutrality.

Negotiations continued for three weeks, but on Nov. 13 the Finns left Moscow. A violent press and radio campaign ensued in the U.S.S.R. against Finland, leading to a charge (on Nov. 26) that Finnish artillery had fired on Soviet troops. Finland denied this, but proposed a joint investigation. On the 28th Soviet Russia denounced the nonaggression pact, disregarding agreed-upon procedure. Finland proposed arbitration (Nov. 29), but the U.S.S.R. had already broken off diplomatic relations.

The "Winter War."—On Nov. 30, 1939, Soviet Russia attacked Finland by land and sea, and by aerial bombardment of Helsinki and other cities. The U.S. offered its good offices, but the U.S.S.R. rejected the proposal. On Dec. 1 the Finnish cabinet was made a coalition of all parties, with Risto Ryti, governor of the Bank of Finland, as premier. Field Marshal Carl Gustav Mannerheim, hero of the war for independence in 1918, took over as commander in chief of the army.

The soviet government probably sincerely believed that the Finnish people were at heart communist, and that communist loyalties and ideology would take precedence over the nationalistic. Therefore, immediately after the invasion, the U.S.S.R. announced the setting up of a "People's Government of Finland" at Terijoki, close to the Soviet frontier. Leader of the group was Otto Kuusinen, exiled Finnish communist and one of the signers of the famous Zinoviev letter of 1924 to the British communists. Soviet Russia would no longer recognize the government in Helsinki.

Indignation was world-wide, and when Finland appealed for assistance to the League of Nations the council voted the expulsion of the U.S.S.R. from the League (Dec. 14, 1939). Large amounts of money for help to Finland were raised in Scandinavia, in Great Britain and in the U.S., and from Sweden came several thousand volunteers and quantities of war matériel and medicines (valued at \$125,000,000).

During the early weeks of the war the plucky Finnish army and its strong Mannerheim line of fortifications on the Karelian isthmus held the soviets, and north of Lake Ladoga the Finns invaded soviet territory. Soviet losses were immense, and Finnish resistance was heroic. Almost to a man the Finnish communists put Finland first and communism second. All turned out to fight the age-old enemy. Soviet hopes for an internal revolution were proved groundless, and the fighting proved too that the militia of Leningrad could not possibly cope with the trained and inspired soldiers under Mannerheim.

But gradually the U.S.S.R., which had underestimated both the determination and the skill of its opponents, brought to bear the weight of its vast resources of men and armaments. By slow but irresistible bombardments the soviets rocked the pillboxes of the Mannerheim line, bombed 32 of Finland's 38 cities, dropped about 100,000 bombs and destroyed 1,800 buildings. The number of Finland's killed and missing men mounted to almost 23,000 and another 43,500 wounded. With their line broken and the casualties rapidly increasing, the Finns could not hold out alone.

Volunteers from abroad could not reach Finland quickly enough or in great enough numbers. Troops from the west were not allowed to pass through Norway and Sweden in numbers greater than 100 per day because of the fear of the Scandinavian states that they would become themselves a main theatre of war. If large-scale aid came from Great Britain and France, it was obvious that Germany would take measures to check it. (See also World War II.)

Between Two Wars.—The result was that on March 12, 1940, the Finns signed a peace in Moscow. Territorially the treaty came to mean (with the agreement on details dated April 29) cession to the U.S.S.R. of: (1) the Karelian isthmus; this included the eastern islands in the Gulf of Finland, the city of Viipuri (Viborg) and the region around Lake Ladoga; (2) parts of the communes of Kuusamo and Salla on the middle eastern frontier; (3) the western part of



Finnish women clearing trolley tracks of snow and ice in the early months of 1940. These and other difficult duties were taken over by women so that men might be released for combat during the Russo-Finnish "Winter War"

the Rybachi peninsula on the Arctic sea (though Finland retained a tiny opening on the sea in the Petsamo region). In addition to these outright cessions, Finland leased to the U.S.S.R. for 30 years the Hanko peninsula. The U.S.S.R. had established itself once more in the Baltic. It had gained its demands, though at immense cost. In a short time it was to consolidate its position further in Estonia, Latvia and Lithuania.

Finland's losses, together with its pledge to complete an east-west railway across the central part of the country, meant an almost helpless strategic situation and severe economic loss. Finland lost access to Lake Ladoga and the eastern gulf coast where about one-third of its fishing had been carried on. It lost rich forest resources, 10% of its arable land, its fourth largest industrial centre (Vipuri) and 625 mi. of railway. Perhaps a fair estimate of the monetary losses was \$600,000,000, more than the annual national income. The losses were the more staggering because almost the entire population (450,000) of the ceded areas had to be resettled in other parts of a country of meagre natural resources, and a dry season reduced the food crops of 1940.

Money for war and reconstruction poured in from the outside world, especially from Sweden and the U.S. Hoover's "Finnish relief" for instance, raised about \$3,500,000. In 1939 and 1940 Finland had to postpone and ask for readjustment of its war debt payments to the U.S. This was granted, as well as extensive government credits. But the problems of rebuilding were accentuated by the continuance of war around Finland, which made impossible the resumption of normal trade. When in the late summer of 1940 the Germans asked for transit privileges

through Finland to Norway, the Finns were glad to grant the request, thinking that the presence of German troops might be a salutary warning to the U.S.S.R. to encroach no farther westward.

The leaders of Finland's second war of independence began even in 1940 to leave the stage. Baron Mannerheim, the military genius of the campaign, stepped into the background. The zealous peasant president, Kyosti Kallió, was stricken with a heart attack in August. In December he resigned, amid popular ovations to the reformer and statesman who personified the best of Finnish spirit. Ready to retire to his country home, he went to the railway station with a military guard of honour, turned and said to the people, "Good-byc, thanks for everything," and fell back dead in the arms of his friend, Field Marshal Mannerheim.

Elected to succeed him was the leading financial statesman of the country, the logical man to direct the economic reconstruction, former Premier Risto H. Ryti. The new president was once a member of the London bar and was known as an exceptionally able banker.

Finland tightened its belt and looked forward hopefully, sanely planning for the clearing of new lands and the building of new cities for the 500,000 homeless, and for the restoration of buildings, such as the demolished technical university in Helsinki. Finland's national independence was intact, and its spirit appeared to be equal to its emergency.

During the winter and spring of 1941 some German soldiers began to camp in Finland, but few people worried, except the soviets, who reported on April 26 that 12,000 German troops had landed at Turku. The British public thought that the soviets were just parading a ghost for some purpose known only to themselves. Meantime, a carefully suppressed controversy on neutrality was agitating Swedish-Finnish diplomacy. Forebodings of trouble accumulated. The British government sent a note to Helsinki announcing that no "navicerts" for ships to Petsamo would be issued after June 14, 1941, because they regarded Finland no longer "free." The British navy intercepted and detained three Finnish ships. On June 18 came rumours of an exodus of soviets from Hanko, their leased base in southwestern Finland. On the same day word leaked out that Finnish soldiers and "Lottas" (members of the women's detense corps) were crowding the streets of Helsinki.

War with the U.S.S.R. Resumed.—On June 20 the Finns reported soviet military movements in Lithuania and declared general mobilization. Two days later the Germans struck at the U.S.S.R. in the south, and on June 27, 1941, Pres. Risto Ryti announced that the soviets had again attacked Finland, and that "for the liberty of the fatherland" Finland was going to war alongside Germany and "their genial leader, Reichschancellor Adolf Hitler." For the third time in 23 years Baron Mannerheim led his troops against the soviets. On Aug. 30, 1941, the Finns could proclaim the recapture of Viipuri (Viborg), though in sadly devastated condition. Long thrusts into soviet territory were made all along the frontier, but the fortifications of Leningrad could not be pierced.

After Sept. 1941 reports recuired that Finland was about to make a separate peace, and individual Finns declared that their country wanted only the old boundary and would stop fighting when that was reached. Official denials were made repeatedly. Through Washington channels, the U.S.S.R. in mid-August was reported willing to discuss peace with Finland (denied in Moscow). Whether by independent decision or through pressure from Berlin,

the Finnish government clung to its policy; on Nov. 25 Finland signed the anti-Comintern pact with the axis countries; on Nov. 29 Premier J. W. Rangell won a unanimous vote of confidence from the parliament. But by this time soviet appeals and their own interests had brought the British to the point of a declaration of war on Finland (Dec. 6, 1941). U.S. Secretary of State Cordell Hull had warned Finland early in November that it must cease fighting the soviet state or lose U.S. friendship. After the British declaration of war, the U.S. government took into custody six Finnish vessels in its ports.

In the "winter war" of 1939-40 between Finland and the U.S.S.R., the sympathy of the world had been overwhelmingly for Finland. But "Bolshevik Russia" then seemed to be on the side of the nazi aggressors, and had attacked Finland. In the struggle which broke out in June 1941 there was question whether Finland or the U.S.S.R. started the shooting. Certainly Finland had admitted German troops and threatened Leningrad; the essential change was that now the U.S.S.R., Great Britain and the U.S. had been thrown into each other's arms. Yet the Finns thought of themselves as fighting only their own ageold conflict with the Russian bear. They maintained their political institutions intact, they insisted they were only using the Germans to help them; their war, they thought, was a "local war" separate from the clash of the great powers. They could not understand the coldness of the Swedes, the enmity of the British and the growing antagonism of the U.S.-all people with whom the Finns felt especially friendly. Perhaps Finland had not changed; certainly the world had changed.

These Allied states, fighting desperately against the nazi threat, knew that the Finnish conflict was not just a "local war." Great Britain and the U.S. saw the Germans using Finnish air bases from which to attack their convoys to the U.S.S R., and to bomb Murmansk and Archangel; they saw Finnish forces holding thousands of soviet troops in the north when they were needed on the southern front In short, whatever the Finnish attitude, it was obvious that Finland was aiding the enemy of the United Nations, and to many that meant that Finland was itself an enemy. Finland's expansionist talk worried even Sweden. Great Britain had declared war. Through mounting tension the U.S. maintained relations, but closed all Finnish consulates in the U.S. in July 1942 and at the end of December stopped the dissemination of Finnish propaganda. The Finnish legation in Washington, D.C., continued to function, but in Dec. 1942 the U.S. minister to Helsinki, Arthur Schoenfeld, was called home "for consultation." This step may have been influenced by reports that Finnish officials had participated in a celebration of Pearl Harbor day at the Japanese legation in Helsinki.

Finland's war against the U.S.S.R. was continued through 1942 as a holding operation, neither nation making any great effort to change the position. The Finns had conquered Karelia and were attempting to carry on reconstruction work there. Even the front north of Leningrad remained essentially stable. Reports of Finnish troops fighting with the Germans on the Stalingrad front were repeatedly denied, though it was admitted some Finnish volunteers might be there.

Economic and social conditions in Finland were bad, but improving slowly. The cost of living index, based on 100 for Aug. 1939, had reached 164 by June 1942; wage readjustments were prescribed on a regular scale to meet mounting costs, and at the end of the year the government

gave its employees an extra month's pay. Trade had declined disastrously, and needed imports were maintained chiefly by special credit agreements with Sweden and by German shipments of foodstuffs. Twenty-five thousand children were sent to Sweden for varying periods, and 4,400 to Denmark. This eased the problem of relief within the country, as did the resettling of 232,000 of those evicted from Karelia in the "winter war"; 161,000 were not yet reestablished. Petsamo was rebuilt with prefabricated buildings from Sweden.

Food supplies were low; no eggs were available for adults and only two per month for children, but the harvest permitted an increase in general food rations. Great stir was caused by the report of 20,000 deaths among Finns who were soviet prisoners of war.

On the positive side of the ledger were such items as the large oversubscription of a new "Fatherland Loan"; the making of motor fuel from wood, the successful lifting of iron ore from lakes, an unexpectedly high yield from the sales tax, and large increases in crops of vegetables, potatoes and fodder. "Working bees" (the talkoo) helped relieve the labour shortage; and woodchopping became a national sport. Government rewards were given for increased farm production. All schools and colleges were authorized to open in Oct. 1942.

Finland's Dilemma.—As 1943 progressed, however, Finland's position became increasingly desperate. The fiction of a separate war in the north could no longer be argued seriously. Finland was caught in the German vise.

Rumours of Finnish desire for peace and of the issuance of "feelers" became rife. The U.S.S.R. was reported to have made a peace offer to Finland in Jan. 1943. U.S. Undersecretary of State Sumner Welles in February appealed to the Finnish people to pull out of the war. Also in February, Björn Prytz, Swedish minister in London, journeyed hastily to Stockholm, and rumours flew that he was to be intermediary in a Finnish-Russian peace move. Through March and April the rumours gradually died out, and in May a group of U.S. leaders signed a petition for a U.S. declaration of war on Finland. In April all but one U.S. diplomatic officer was removed from Helsinki. In August some 33 Finnish politicians sent to the government a request for peace. At approximately the same time Eero Vuori, chief of the Finnish Trade Union congress, met in Stockholm with Arthur Deakin, official of the British Transport and General Workers union; peace was the issue, but no results showed. Through Sept. and Oct. 1943 suggestions of peace proposals continued. Premier Linkomies in September expressed regret at being at war with Great Britain and hoped that Finland could withdraw from the war with the U.S.S.R. Vaino Tanner, finance minister and ardently antisoviet, made a radio address urging that Finland be realistic and make a "reasonable" peace with the U.S.S.R. But 1943 passed with no agreement, and all that was really sure was that the U.S.S.R. and Finland had not agreed on what was reasonable. Soviet propaganda continued to be as harsh toward the Finns as toward the Germans and pointed out that the Finns, while winning, had seemed quite eager to participate in the results of a Hitler new order.

From a purely military standpoint the war in the north remained a stalemate, with only minor border forays and slight movement. Perhaps Col. Gen. Eduard Dietl and the German forces were concerned largely with their relations with the Finns; and certainly the Finns were not eager to risk increased casualties for futile conquests. The food situation was bad in 1943 but good harvests and 30,000 tons of grain from Germany gave Finland about a six-month supply. Dependence on Germany for supplies may have been the chief factor holding the country to an allegiance of which it had completely sickened. Industrial production dropped, according to Moscow reports, to 35% of normal. Some trade was still carried on with Sweden, and in Dec. 1943 an agreement was signed for the first six months of 1944, providing a Swedish credit of 5,000,000 kronor to Finland for purchases in Sweden. Trade agreements were also negotiated with Germany, Denmark and Spain.

Payment of the much-discussed debt to the U.S. was resumed in June 1943 and in October Finland agreed to a plan to repay the instalments missed in 1941 and 1942 over a period of ten years.

At least 11,000 Ingermans, descendants of Finns who moved some 250 years before to the region southeast of Leningrad, were sent to Finland in 1943 by the Germans, and about 25,000 more were expected. Starvation and hardship had played havoc with these people, but the Finns were glad to welcome their distant kinsfolk.

A presidential election was held on Feb. 15, 1943, resulting in the re-election of Risto Ryti by 269 votes out of 300. On his reinauguration on March 1, the first time any Finnish president had succeeded himself, the cabinet resigned according to custom. The reshuffling, after some delay, brought in as prime minister Edwin Linkomies, Conservative leader, chairman of the editorial board of the Uusi Suomi, and professor at the university. Sir Henrik Ramsay, Finn of Scotch descent, became foreign minister. The former holders of these key posts, J. W. Rangell and Rolf Witting, were probably the strongest pronazis in the cabinet. Marshal Mannerheim remained, at 75 years of age, head of the armies.

On Feb. 8, 1944, U.S. Secretary of State Hull warned Finland in stronger terms than ever that if it continued in its war with the U.S.S.R. it would have to take the consequences. The U.S.S.R. illustrated the threat by bombing Helsinki. Peace discussions soon started, Juho Paasikivi, Finland's negotiator of 1940, going first to Stockholm and later to Moscow for talks. The U.S.S.R., however, demanded an indemnity of \$600,000,000, re-establishment of the 1940 frontiers, and negotiations about cession of the Petsamo area, plus the unequal demand for immediate release of soviet prisoners but soviet release of Finnish prisoners only after completion of the treaty. The Finns were not yet in a mood to accept such humiliating terms.

Gradually the mood changed. The soviets started a general offensive in Karelia and advanced in sweeping successes on their south European fronts. British and U.S. forces landed in Normandy. The German friends of Finland were retiring on every front. On June 16, 1944, the U.S. expelled the once popular Finnish minister in Washington, D.C., Hjalmar Procopé, and four of his aides, for actions "inimical" to the U.S. Eighty-four Finnish firms were blacklisted. In the face of these events, driven by desperation, on June 27 Pres. Ryti made a special agreement with Joachim von Ribbentrop, who went to Helsinki, by which Ryti promised that Finland would continue fighting, and in return for which pledge a few additional German troops were sent to Finland. This agreement was the last straw for the U.S., and on June 30 Secretary Hull



broke off diplomatic relations with Finland.

The Second Humiliating Peace.—The Finnish people wished peace, and Marshal Mannerheim was convinced that the army could no longer stand against soviet power. Thus, on Aug. 1, 1944, the pro-German Pres. Ryti was forced to resign, and parliament at once asked Mannerheim to become president. Out with Ryti, of course, went Premier Edwin Linkomies and Foreign Minister Sir Henrik Ramsay. Antti Hackzell became premier, and he soon announced that the June agreement was only a personal pledge of Ryti to von Ribbentrop, hence not legally binding. A new approach was made to the U.S.S.R.; on Sept. 2 relations with Germany were severed and German armies were given until Sept. 15 to evacuate Finland. The peace treaty signed by Finland with Great Britain and the U.S.S.R. in Moscow on Sept. 19 provided:

- (1) Aerodrome and port facilities in Finland were to be extended to the Allies during their war against Germany;
- (2) German forces in Finland after Sept. 15, 1944, were to be handed over as war prisoners; the U.S.S.R. would assist Finland to effect this action;
- (3) Finland promised to break relations with Germany's satellites and to suppress organizations hostile to the United Nations, "in particular to the soviet union;"
- (4) The frontier of 1940 was to be re-established with some modifications (the U.S.S.R. received the Petsamo region, thus shutting off Finland from the Arctic ocean; the U.S.S.R. gave up its lease on Hanko peninsula for similar privileges for a naval base in the Porkkala-Udd area near Helsinki);
- (5) Finland was to pay in five years an indemnity of \$300,000,000 in produce to the U.S.S.R. (this was half of the first demand, but still heavy for a country whose total foreign trade in 1938 was only \$365,575,000).

Bitter conflict followed with Col. Gen. Lothar Rendulic and his Germans, who committed much destruction as they retreated into northern Norway. The Finns pressed from the south, up through Tornio and Rovaniemi, on Nov. 22 reaching the Norwegian border in the north. The soviets came in from the sea, captured Petsamo in mid-October, and chased the Germans some 75 mi. westward, then left them to the problems of cold and distance and the hostile Norwegians.

The Allied Control commission in Finland included some British, but was naturally dominated by the soviets, of whom Col. Gen. A. A. Zhdanov was the chief. The soviets announced a list of about 60 Finnish war criminals, mostly officials of the Finnish occupation of Karelia.

Circumstances naturally accentuated political tensions, and governmental changes were frequent. Premier Hackzell became ill during the Moscow negotiations and was succeeded by Urho J. Castrén. In early November 1944 the former finance minister, Väinö Tanner, it appeared, caused a cabinet crisis which resulted in a complete reshuffling. Whether or not the assassination of two soviet officials in Helsinki had any connection with the crisis was not clear. The new cabinet was headed by Juho K. Paasikivi, and included for the first time a communist as assistant secretary of labour-Yrjo Leino. Eero Vuori became minister of labour and Carl Enckell became foreign minister. Ten of the cabinet members were new, and seven were directors of the newly established Finland Soviet association. The Finnish government was trying hard to build good relations with its powerful neighbour.

Sweden granted Finland a reconstruction credit of \$35,000,000 for purchases in Sweden after the peace was

signed. The December instalment on the famous Finnish debt to the U.S. was refused by the U.S. treasury because Finland was still officially axis territory and its funds were frozen. On the last day of the year Pres. Mannerheim relinquished his supreme military command and appealed for general co-operation in the peaceful reconstruction of Finland.

Evidently to facilitate soviet use of Finnish bases, Finland formally declared war on Germany on March 3, 1945, announcing then that a state of war had actually existed from Sept. 15, 1944, when German forces attacked the island of Hogland.

Attempt at Reconstruction.-Political reorganization was difficult, but seemed to progress "as well as could be expected" under the firm and farsighted guidance of Premier Paasikivi. The premier's basic policy was one of friendly co-operation with the U.S.S.R. within a framework of Finnish independence. Elections to the 200-member unicameral parliament were held on March 17 and 18, with a considerable change from 1939 in the party lineup. The left gained at the expense of the right, and the formerly predominant Social Democrats lost many seats to the coalition called Popular Democrats (40 of whose 49 deputies were communists). Even then the total vote amassed by the right was about 732,000 as against 711,000 for the left. The Finnish nazi party (formerly holding eight seats) was banned from the elections, and a number of the former antisoviet leaders like Väinö A. Tanner, Edwin Linkomies, Henrik Ramsay and Tyko Reinikka, did not stand for election. The two days of voting were ushered in by Paasikivi's warning that it was not enough merely to observe the letter of the armistice with Moscow, and that the elections were the supreme opportunity for Finland to prove its intentions. The results gave: Social Democrats (anti-Moscow) 50 seats, a loss of 35; Popular Democrats (pro-Moscow) 49 seats; Agrarians 48 seats, a loss of nine; Conservatives 29 seats, a gain of two; Swedish Peoples' party 16 seats, a loss of two; Liberals (or Progressives) 7 seats.

The cabinet resigned after the elections, as was usual, but Paasikivi retained his position in a new-formed government, which included Foreign Minister Carl J. A. Enckell (nonparty); Minister of Finance M. Tuomija (Liberal); Minister of the Interior Yrjo Leino (communist). The total cabinet contained four communists, four Social Democrats, two Popular Democrats, four Agrarians, two nonparty and one Swedish Peoples' party.

The soviets appeared pleased at the trend of the elections, but they had taken no visible part in the campaign. Everything indicated that they were quite ready to let the Finns make their own decisions—and be responsible for their actions. In a speech on April 7, 1945, at the opening of the new parliament, Pres. Mannerheim called for "lasting, friendly relations, founded on common interests and mutual confidence, with the soviet union" and for a complete reform of Finnish agriculture.

The armistice terms bore heavily on Finland, and inevitably resentment expressed itself. Some of the opposition was natural and innocent, but more serious tensions were indicated by the arrest of 34 Finnish general staff officers in July, 1945, for storing of arms and sabotage of the armistice. In September some 200 arrests were made and "second officers" of the general staff were rumoured to be implicated in a plot involving storage of arms in each of Finland's former "protective corps" districts. Early in August the soviets relaxed some of the restraints on Finnish shipping and travel, and new hope arose. However, in October two new demands for reparations created

despondency: \$15,000,000 payment for German assets in Finland, and \$14,000,000 for damage inflicted by the Finns during the occupation of Karelia, both payments to be made in 1946. This burden, added to the \$50,000,000 annual payment on the \$300,000,000 agreed on in 1944, had to come from a country with depleted resources, few ships and with small chance of remunerative trade. Payments had to be made in specific categories of goods with fines for delays. The fact that payments had to be made in kind actually worked out to a doubling (in current values) of the monetary figure of reparations, and thus to a still tighter channelling of all Finnish exports to the U.S.S.R. Under these circumstances the political freedom carefully left to the Finns was of slight satisfaction.

Following the soviet lead (Aug. 7, 1945), Great Britain and the U.S. resumed diplomatic relations with Finland (resumption of U.S. relations with Finland dated officially from Sept. 1). Since the U.S.S.R. and Great Britain were the chief Allies at war with Finland, they alone negotiated the armistice and maintained the control commission in Helsinki. The London conference of foreign ministers failed to reach agreements on implementing the peace, but the conference in Moscow in December opened the way for negotiation of the definitive peace treaty.

Restoration of trade relations with the west was

attempted; an agreement with Great Britain, beginning Aug. 17, 1945, and continuing to June 30, 1947, permitted normal trade and financial transactions. Some export of pulpwood to the U.S. was resumed in the late fall, and the U.S. Export-Import bank on Dec. 13 granted a 15-month credit of \$5,000,000 for Finnish purchase of U.S. cotton. British agents were reported vigorously pushing trade on a credit basis.

The prosecution of war criminals was perhaps more difficult in Finland than in most countries, for it was hard to separate war criminals, war culprits and the various others who were merely antisoviet or anticommunist. Early in 1945 an investigating committee had been set up under the chairmanship of Dr. Erik Hornborg. The trials got under way only in mid-November, after much prodding by the control commission, and the passage of a law by the Diet (Sept. 11) providing for punishment of those responsible for taking the country into war on the German side. On Nov. 6 eight men were dramatically arrested and on the 15th were brought to trial: Risto Ryti, president; Edwin Linkomies, premier; Johan W. Rangell, premier; V. A. Tanner, minister of finance and head of Social Democratic party; Tyko Reinikka, minister of finance; Henrik Ramsay, minister of foreign affairs; Antti Kukkonen,

	1938		194	1	194	1944*	
ltem .			Value (000's omitted)	Amount or Number	Value (000's omitted)	Amount or Number	
Exchange rate United States		1 markka = 2.15 cen	ts	1 markka = 2 cents	1 /	markka = 1.02 cents (1945)	
Great Britain		227 markkas =£1		195 markkas =£1		(1943)	
Government revenues	\$118,995 (£24,339) \$116,806 (£23,892)		\$599,205 (£148,612) \$628,489 (£155,872)		\$382,493 (£94,789) \$447,815 (£110,983)		
Gold reserves	\$24,338 (£4,978) \$78,981 (£16,1 <i>5</i> 7)		• • •		\$686,680 (£110,983)		
Transportation Railroads		3,658 mi. 39,650 " 35 "		3,393 mi. 		3,691 mi.‡ 39,844 "‡ 35 "‡	
Airways		741 Ҡ		•••		•••	
Telephones		185,456 1,593 mi. 293,790		200,996 375,470		229,956§ 20,241 mi.§ 542,198§	
Minerals Copper concentrates		69,626 tons 113,514 "		74,824 tons 155,134 "		81,202 tons 140,720 "	
Crops Hay		4,732,174 tons 1,455,036 " 900,579 " 405,757 "		2,188,231 tons 813,826 " 498,455 " 242,186 "		2,611,277 tons § 919,422 " § 381,582 " § 168,318 " §	
Livestock Poultry		2,814,960 1,925,078 1,072,307 504,164		1,964,059 1,588,317 717,349 259,229		1,082,366 1,866,795 964,645 364,312	
Forest products Timber		134,110,333 cu. ft.				124,842,993 cu. ft.	
Sea Products Baltic herring Pike Sprat Sprat		17,060 tons 1,053 " 442 "		15,355 tons 831 " 245 "		19,254 tons ‡ 1,208 " ‡ 267 " ‡	
Manufactures—Total	\$454,956 (£93,057) \$181,352 (£37,196) \$77,560 (£15,864) \$50,735 (£10,377) \$180,557 (£36,911)		\$86,430 (£21,436)		\$386,296 (£95,736) \$116,139 (£28,783) \$62,035 (£5,079) \$60,842 (£5,079) \$67,293 (£16,677)		
Pulp	\$46,749 (£9,562) \$44,985 (£9,201) \$13,975 (£2,860) \$10,319 (£2,111)	1,373,434 tons 179,030,939 cu. ft. 394,546 tons 26,345 "	\$24,272 (£6,020) \$15,805 (£3,920) \$2,094 (£519)	569,448 tons 43,600,217 cu. ft. 56,197 tons	\$9,452 (£2,333) \$6,737 (£1,670) \$2,373 (£588)	228,105 tons 24,491,588 cu. ft. 43,248 tons	
Butter and cheese	\$185,057 (£37,852) \$10,541 (£2,156) \$4,686 (£958)	1,959,640 tons	\$204,022 (£50,601) \$14,641 (£3,631) \$1,414 (£351) \$9,128 (£2,261)	1,173,355 tons 7,082 "	\$90,968 (£22,545) \$7,000 (£1,735)	997,629 tons 7 "	
Sugar	\$4,232 (£866) \$4,077 (£834)	129,589 " 3,821 "	\$9,128 (£2,261) \$4,110 (£1,019)	66,918 " 1,439 "	\$3,582 (£888) \$483 (£120)	32,745 " 138 "	
Defense Standing army personnel Reserves Standing navy personnel		29,300 260,700 4,500		151,3000 250,0000			
Standing air force personnel Military expenditures	\$26,733 (£5,468)	1,300		•••			
Education Elementary schools		11,565 407,146 229 52,296	o 51045 H\$10	12,122 480,939 220 56,302	Service Service	13,345 448,089 248 § 72,848 §	
*All 1944 values converted on 194	15 value of the markka.	†1939. ‡194	3. §1945. \$19	(£15), value of chee	ese only. ¶\$714 (£17	77). 91940.	

Finland, Statistical Data

minister of interior; Toivo Kivimaeki, minister to Berlin.

The first sentences of the Finnish supreme court were too light to satisfy Gen. Zhdanov and the control commission, and had to be revised. As announced on Feb. 21 the final verdict levied on Ryti a ten-year term at hard labour; Tanner, five and a half years; Rangell, six years; Kivimaeki, five years; Ramsay, two and a half years; Kukkonen and Reinikka, two years each.

Pres. Mannerheim, who had not been involved in the trials, was 79 years old and ill; all the soviet demands except for reparations had been fulfilled; he felt that he could retire. On March 4, 1946, he submitted his resignation, and the cabinet was obliged to accept it, recommending that the Diet elect a successor to fill out the term. Although he left office in a time of national tragedy, he stood in bold relief as the great man of Finland's period of independence.

The Diet, 159 to 14, quickly elected the premier, nonparty Juho K. Paasikivi (75), who had so often negotiated with the soviets. He had first sat in the Finnish diet in 1907, when Finland was a Russian grand duchy, and had held a variety of high posts for nearly 40 years. He took the oath of office March 11 and then had to find a premier to succeed himself. After considerable difficulties Mauno Pekkala, former defense minister, formed a cabinet (March 24). Carl J. H. Enckell, an Independent, remained as foreign minister, six ministers were from the Popular Democratic party, which included the Communists, five were Social Democrats, five Agrarians and one of the Swedish party. It was more leftist than Paasikivi's cabinet. Incidentally, the Social Democratic party seemed to be guided still by Vainö Tanner, from his jail cell, but the soviets seemed fairly well satisfied with the whole situation.

The Finns sent a strong delegation to the peace conference in Paris, and tried to obtain amelioration of the terms of the peace treaty with the U.S.S.R. Hope was not high, and it was known that the soviet naval base at Porkkala-Udd and the taking over of Petsamo were faits accomplis. The Finns hoped for reduction of the \$300,000,000 reparations bill, and they pushed vigorously for the privilege of using the Saimaa canal. But the Finnish treaty commission at Paris left things as they were, and the only hope for any modifications appeared to lie in direct negotiations with the soviet union.

Economic conditions were bad, yet the Finns, inured to misfortune, were making real recovery. The rubble of bombings was cleared away in Helsinki, houses were being built to care for the homeless Karelians and others and reparations payments were kept up to date. A U.S. credit of \$35,000,000 was granted by the Export-Import bank, trade was maintained with Sweden and a trade treaty was negotiated with the U.S.S.R. in May 1946. The latter provided that Finland send the U.S.S.R. prefabricated houses, copper, etc., and that the U.S.S.R. send Finland grain, animal foodstuffs and some raw materials. Herbert Hoover, on his visit to Helsinki April 1, found food supplies dangerously low. But the Finns thought they could get along and were more interested in raw materials and machinery for industrial production than in increased food imports. In August 1946 it was decreed that Finnish citizens must turn over to the Bank of Finland shares and bonds in foreign firms, to give the government foreign purchasing power. The Finns were using every means available to rebuild their strength.

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Fire Insurance

See INSURANCE.

Fires and Fire Losses

Fire losses in the United States in 1946 were more than double the 1937 figure, and each year after 1937 showed an increase over the preceding one. The National Board of Fire Underwriters estimate of 1946 losses, including those unreported and uninsured, was \$561,487,000 as against its 1937 aggregate loss figure of \$254.959,423.

For the decade 1937–46 the losses were as follows: 1937, \$254,959,423; 1938, \$258,477,944; 1939, \$275,102,119; 1940, \$285,878,697; 1941, \$303,895,000; 1942, \$314,295,000; 1943, \$373,000,000; 1944, \$437,273,000; 1945, \$484,274,000; 1946, \$561,487,000.

Much of the decade's huge increase in fire losses could be laid to the marked rise in the aggregate value of goods subject to the risk of fire. Part of this increased value was due to more goods being in existence and part to the inflationary price trend. However, even assuming a stationary level of values throughout the ten years, fire losses would still have shown a substantial increase, probably about 50%.

Unlike the dollar volume of fire losses, this adjusted figure, after a gradual rise in 1937—40 inclusive, showed a substantial improvement in 1941 and 1942. It climbed sharply in the next two years, however, and somewhat less steeply in 1945 and 1946.

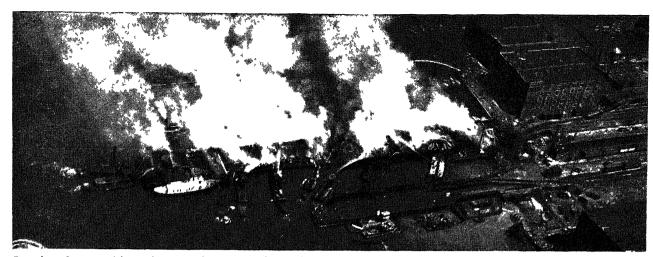
The number of fire losses, which had been going up, appeared to have levelled off about the end of 1943. It was not clear whether the peak in number of losses had been reached or whether there had been merely a pause in the upward trend. A major reason why the cost of fire losses continued upward so sharply despite the decline in the number of fires appeared to be the great increase in the number of large fires—those causing a loss of \$250,000 or more. In 1940, a fairly typical year, there were 34 fires in which the estimate of loss exceeded \$250,000. The number increased each year until by 1945 there were 144 fires in the \$250,000 category. Also, the 34 such fires occurring in 1940 represented about 6% of the total fire loss whereas the 144 \$250,000 fires of 1945 accounted for more than 22% of the year's total fire loss.

While the spectacular increase was among the large fires, the records showed that no category—manufacturing, mercantile, residential, accessible to fire department protection or not—succeeded in escaping the increase in fire losses.

Despite the mounting property losses caused by fire, it took the shocking death toll from three hotel fires of 1946 to arouse the nation to the seriousness of the fire hazard; these three were the Hotel LaSalle in Chicago, Ill., the Canfield hotel in Dubuque, Iowa, and the Winecoff hotel in Atlanta, Ga. One result was intensive agitation for retroactive building codes requiring enclosure of clevator shafts, stair wells and other vertical openings between floors. Another was the calling by President Harry Truman of a conference "to bring the ever present danger from fire home to all our people and to intensify the work of fire prevention in every town and city in the nation," as the White House announcement phrased it.

(R. B. Ml.)

British Losses.—The most spectacular fire damage in Great Britain during 1937–46 was the damage resulting from German air attack. Incendiary bombs caused great



Five-alarm fire started by explosions in the cargo of the freighter "Panuco" spread rapidly through a large Brooklyn pier Aug. 18, 1941, and killed more than 30 longshoremen and sailors

destruction, the worst effects being felt in the city of London, where a large area containing much of London's historical and architectural treasure was reduced to ashes. Excluding fires caused by air raids, there were no major conflagrations; outbreaks of fire continued nevertheless to menace life and property and to handicap human effort.

Government departments as well as private and voluntary institutions had attacked the problem of minimizing fire wastage after 1937. The Fire Brigades act, 1938, compelled all local authorities to establish efficient fire-fighting services under government supervision; and unification was achieved in 1941, when a strict central control was imposed, and the national fire service replaced the locally-administered brigades. At the end of World War II control tended to revert to the local authorities; but centralized instruction remained, and the state continued to see that the prescribed standards of efficiency were maintained.

Probably the most practical efforts to reduce fire wastage were made at the fire offices committee's testing station at Elstree. The unique technical service provided there proved of great help to the home office, service departments and other ministries during World War II, as well as to the industrial and commercial interests originally served. Research and experimental work in the combustibility of building materials and elements of structure continued at Elstree; sprinklers, chemical extinguishers and fire alarms were tested, and all aspects of fire prevention and extinguishment were studied exhaustively.

The problem was attacked from another angle in 1942 when the fire offices, with full government approval, launched a publicity campaign against carelessness as a cause of fire. Arresting posters and attractive newspaper advertisements, films and radio talks were all employed to draw the layman's attention for the first time to fire wastage; and all that could be done to awaken the public conscience to the fire peril had been done by the time the campaign had ended in 1945. The Factories act, 1937, also helped to minimize fire losses in applying statutory rules and orders to certain hazardous trades; and the vigilance of fire-insurance surveyors, working harmoniously with the factory department of the home office, played its part. Unfortunately the results of all these efforts to restrict fire wastage were disappointing. In Dec. 1946 a new venture was announced: a fire research organization was to be set up to investigate methods of preventing and fighting fires and to conduct research on the protection of buildings, aircraft, ships and special industrial hazards. It was to be a joint undertaking by science, industry and the state, the expense equally shared by government and industry.

The cost of home fire losses was difficult to estimate, since the insurance offices' published accounts did not separate home and foreign figures.

According to estimates published in the *Times*, the yearly average cost of fire losses for the six years ending 1945 worked out at £11,500,000 against £9,500,000 for the preceding six years. Direct fire and damage in Great Britain and Eire amounted to £12,800,000 in 1945, the heaviest wastage after 1920. In 1946 it was estimated to be £12,047,000.

World War II contributed much to the increased cost of fire losses. Machinery was overworked and madequately maintained; unskilled operatives replaced workers drafted into the services; new factories were built without efficient sprinkler protection; and inflammable goods were concentrated in unsuitable storage places. The human element also entered into it; war strain led to widespread carelessness and irresponsibility, and there was a great increase in illicit cigarette smoking, especially among women workers.

Agricultural losses were particularly heavy, notably in Scotland; the cause was probably intensive farming leading to bulk storage in unsuitable locations. Stacks of agricultural produce suffered severely, frequently through their being crowded together, for convenience of transport, near public highways or railways.

Causes of fire during 1936-47 reflected the increased use of electricity. Electrical breakdown in radio sets, refrigerators and other domestic equipment caused many fires, and portable electric heaters figured all too frequently in analyses of causes.

But the most frequent cause of fire remained, as ever, carelessness, particularly the careless disposal of cigarette ends and unextinguished matches. (See also DISASTERS.)

(E. M. M.)

Fish and Wildlife Service

See FISHERIES: WILDLIFE CONSERVATION.

Fisher, Geoffrey Francis

The 97th archbishop of Canterbury (1887—) was born May 5, 1887, the youngest son of the Rev. H. Fisher, rector of Higham-on-the-Hill, Nuneaton, England. The primate of all England was educated at Marlborough and at Exeter college, Oxford, and, after a short period of training at Wells theological college, became an assistant master at Marlborough in 1911. He was ordained deacon

346 at Salisbury in 1912 and a priest in 1913. In 1914 he was appointed headmaster of Repton school, in Derbyshire. In 1917 he married Rosamond Chevallier, granddaughter of Dr. S. A. Pears, a former head of Repton. He was consecrated bishop of Chester in 1932 and bishop of London in 1939. As chairman of the executive committee of the British Council of Churches, he was active in the movement for inter-denominational understanding and cooperation. He was also recognized as a conservative and able church administrator. On April 19, 1945, he succeeded William Temple as archbishop of Canterbury.

Fisheries

The estimated production of the world's commercial fisheries at the beginning of the period 1937-46 was approximately 18,500,000 tons, with a value of about \$762,-000,000. This figure was exclusive of whale products, and of an estimated 1,000,000 tons produced by subsistence fishing, angling and unrecorded commercial production.

To an overwhelming degree, the northern hemisphere led in fishery production, yielding 98% of the total tonnage. Of the world yield, 46% came from the waters of the North Atlantic and 47% from the North Pacific. Considered by continents, Asia, with its extremely long coast line, furnished 49% of the total production, Europe 32%, North America 16% and other countries 3%.

The leading fishery nations of the world, from the standpoint of the volume of their production, were Japan, the United States and Alaska, the soviet union and China. These countries collectively provided about one-half of the world's total production.

From the standpoint of the percentage of national energy going into fishing, however, Iceland was the leading fishery nation. The per capita production of fish in Iceland was 6,223 lb., in Newfoundland 1,525 lb., in Norway 680 lb. and in Japan 111 lb.

The species of principal commercial importance varied from country to country, but in general the marine fisheries of the world were based on three great groups of fishes: the bottom-living or ground fishes, including cod, haddock, halibut, hake, cusk and pollock; the surfaceliving or pelagic fishes such as the sea herring, pılchards, mackerels, tunas, anchovies and menhadens and the anadromous species that migrate from salt water into coastal rivers to spawn-the salmons, smelt, alewives and shad.

Operations Curtailed by War.-The relation of World War II to the fisheries was so direct and immediate that it dominated the entire period under consideration. It was a two-way relationship. On the one hand the conflict imposed tremendous handicaps on the conduct of fishing; on the other, despite all difficulties, the fisheries made contributions of food and materials which played an indispensable part in the conduct of the war.

Almost from the beginning of the conflict the principal European fishing grounds such as those in the North sea became the scene of bombings and torpedoings. Wherever hshing craft could operate, they did so at great hazard Most of the trawling grounds of the North sea, as well as productive grounds in the Mediterranean, were virtually closed to fishing during the greater part of the war. In all nations, the largest fishing boats were converted to military use, serving as transports, freighters, mine sweepers and the like. In countries like Denmark and Norway, under German occupation, fishing was carried on where possible with the small vessels remaining. But in France, the Netherlands, and Belgium the fishing industry, including shore facilities as well as vessels, was all but destroyed. In the Netherlands, for example, only 12 trawlers were left intact out of a considerable prewar fishing fleet.

Although the United States was spared direct attack upon its fishing ports, submarine warfare invaded many of the grounds familiar to U.S. vessels. For security reasons, the far-ranging tuna clippers were barred from the highly productive grounds about the Galapagos Islands. Salmon fishing had to be suspended in Bristol bay in Alaska in 1942 because of Japanese activity in the Aleutians. Since this remote area supplied the principal pack of red salmon, production of this valuable food was directly affected. On the western Atlantic coast, and especially on the New England and Nova Scotian fishing banks, the possibility of attack by submarine was a constant threat.

A less spectacular but far reaching impediment to fishery production was illustrated by events in the United States. Immediately upon the entrance of that nation into World War II, about 700 fishing boats were requisitioned by the army and navy. These boats included the largest and fastest units of the fishing fleet. For the most part, they belonged to segments of the fishing industry that normally produced the heaviest poundage-the salmon, pilchard, tuna, menhaden and New England vessel fisheries. This transfer of boats to the military services continued throughout much of 1942. Its effect on production was most sharply felt during the latter half of that year and in 1943. The diversion of even one of the larger vessels from fishing meant a decline of 5,000,000 lb. to 7,000,000 lb. in the catch. It was estimated that the aggregate effect of the loss of fishing vessels was a decline of approximately 1,000,-000,000 lb. in total production.

Some of the requisitioned vessels were returned in 1943. others in 1944. A program of new construction, however, was chiefly responsible for restoring the productive capacity of the fleet to approximately prewar levels by the spring of

Not only boats, but all the materials used by fishermen were needed for war. Netting was required for camouflage and for cargo nets; hence for many months the normal re-

Fishermen unloading a herring catch on the west coast of the U.S. in 1944. Formerly used largely as bait or converted to fertilizer, herring went chiefly to food markets in war years



placements for worn-out fishing gear could not be had. Manila for any purpose was scarce, the Philippines having been the principal source of this fibre. Engines for small fishing boats were also suitable for landing craft, and until military needs had been met the industry could not be supplied.

Despite these handicaps, production was maintained at a fairly high level except for the sharp decline that occurred in the first year of the war. From the normal peacetime production of about 4,400,000,000 lb., the catch fell to 3,700,000,000 lb. in 1942. In 1943, however, it rose to 4,000,000,000 lb., and in 1944 to 4,300,000,000 lb., remaining at approximately this level in 1945 and 1946.

Effect of War on World Trade.—Apart from its immediate and drastic impact on the operation of fisheries, the war induced many far-reaching changes with ramifications extending to almost every nation having important fishing industries. Some of these changes set in motion a chain of economic consequences that continued into the postwar period.

Great Britain, for example, was unable to maintain its normal production of fish; its fishing boats were widely occupied in war service and operation on the accustomed grounds was hazardous (see below). Accordingly, it turned to nations of the western Atlantic for greatly increased imports. This induced Canada and the United States to attempt by every possible means to increase their production of canned fish, and to obtain larger allotments for export by restricting consumption of this commodity by their civilians. It induced such countries as Newfoundland and Iceland to expand their facilities for filleting and freezing fish so greatly that virtually new industries were created. The traditional method of fish processing in these two countries had been by salting prior to World War II. This was largely abandoned in favour of freezing. As the production of salt fish declined, the Caribbean and Mediterranean countries, in whose diet salt fish is a staple item, experienced extreme difficulty in obtaining large enough imports to meet their needs. The countries of the West Indies in particular suffered from an inadequate quantity of salt fish. Attracted by this potential market, some South American countries such as Peru, which hitherto had not developed a large fishing industry, began attempts to stimulate fishing and especially the production of salt fish.

The end of the war found Iceland with a completely altered fishery economy, having become one of the principal producers of frozen fish fillets in the world. To a considerable extent, the balance of production in Newfoundland also had shifted from salt to frozen fish. With this huge new supply in the world markets, the economy of other nations was affected accordingly. Imports of trozen groundfish fillets into the United States from Iceland rose from 13,000 lb. in 1939 to 1,402,000 lb. in 1945. Imports from Newfoundland during the same period rose from 46,000 lb. to 3,938,000 lb. Despite these developments, fishery experts at the close of the war looked for some revival of the salt fish industry and predicted that salting might again become one of the principal methods of processing fish to supply needed animal protein at low cost to local peoples.

Wartime interference with the accustomed flow of fishery products in world trade had other effects, such as the development of an intensive fishery for sharks in the United States as a means of supplying the demand for vitamin A oils, formerly imported in large quantity from Norway. Following the discovery by Canadian scientists in 1927 that the liver of the dogfish (a small shark) has a vitamin A potency five to ten times as great as that of the standard

grade of cod liver oil, a small fishery for sharks was begun in the United States in 1936. About 1938 it was discovered that the liver of the soupfin shark far exceeds even that of the dogfish in potency of vitamin A. As a result, the new fishery grew so rapidly that landings increased from 2,500,000 lb. in 1937 to 40,000,000 lb. in 1941. In 1944 the fish and wildlife service reported that "no fishery in America has ever increased with such rapidity as that for the soupfin shark. Only a few years ago the value to fishermen of all sharks taken was about \$500,000 a year. It is estimated that sharks were worth more than \$8,500,000 to fishermen in 1943."

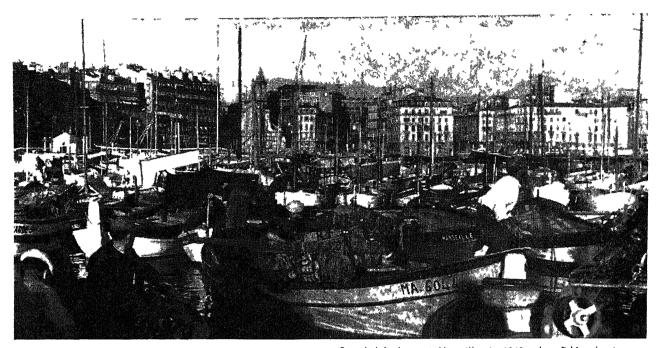
A decline in the production of soupfin shark became apparent during 1944, continuing into 1945 and 1946. Conservationists viewed the situation with some apprehension, believing that intensive fishing, carried on under the stress of war and without the guidance of any knowledge of the biological requirements of the sharks, had already brought about depletion of the resource.

Because of the unprecedented wartime demand for fishery products, coupled with shortage of labour and materials for maintaining production, certain kinds of fish formerly rejected by consumers were utilized during the war years. The Technical Committee on Fisheries, reporting to the United Nations Interim Commission on Food and Agriculture on April 13, 1945, said: "Quantities of fresh, frozen, and dry-salted shark meat are now used for human consumption, and vitamin A concentrates from shark-liver oils have been used to fortify foods. It was demonstrated that menhaden (a herringlike fish) could be prepared as an appetizing canned product while large sea herring, formerly not canned to any extent, were now so prepared in great quantities. Other new developments in the canning industry included the packing of sardines in tall instead of flat containers with greater economy of labour; the preparation of acceptable new canned products from the waste portions of salmon formerly discarded in cannery operations; and the development of an excellent quality of canned fish flake from lake carp. . . . It may well be that preference for these products will develop and continue during the postwar years, thus bringing about greater utilization of fishery products."2

Technological Progress.—Although the decade 1937–46 was not marked by the development of any revolutionary new method of fishing, such as the rise of otter trawling in the 1920s, it saw the adoption by the industry of many mechanical improvements. The net effect was marked progress in the modernization of the industry.

A strong tendency toward making the fishing vessel largely independent of the shore station was evident. This took the form of installing freezing, refrigerating and other processing equipment aboard ship, so that vessels were able to remain at sea for a longer period and to go farther afield. Freezing and refrigerating machinery became standard equipment aboard the tuna clippers operating on the Pacific coast. So equipped, these boats were able to remain at sea for several months and at the completion of their voyages deliver a cargo of frozen tuna to the canneries. Floating canneries operated in the California pilchard fishery for a short period, and a few such vessels were operated in the Alaska salmon fishery. In 1943 the Pacific otter trawler "Soupfin" pioneered in the filleting and freezing of ground fish (such as flounders)

¹United States Department of the Interior press release, April 10, 1944 ²Five Technical Reports on Food and Agriculture, submitted to the United Nations Interim Commission on Food and Agriculture by its Technical Committees on Nutrition and Food Management, p. 204, (Aug. 20, 1945).



Crowded harbour at Marseilles in 1942, when fishing boats were port-bound for lack of gasoline. Fishery output was reduced to a fraction of normal

while at sea. In 1946 plans were under way for at least two expeditions by United States vessels involving the joint operation of a factory ship with a fleet of trawlers. Several other nations had such units in operation in 1946. All of these developments were widely interpreted to mean the setting in of a strong postwar trend resulting in a wider ranging of the seas by fishing boats and a general improvement in the quality of the fish brought into port.

Automatic sounding apparatus was in wide use by fishing vessels. These devices utilized the principle of measuring the time required for sound waves generated aboard the vessel to reach the bottom and return to a receiving instrument. They made possible a continuous and instantaneous recording of the depth of water beneath the keel, contributing greatly to the safety of navigation.

Probably the first attempt to use these sounding instruments to detect schools of fish was made in the 1920s, but intensive interest in such applications was delayed for a decade or more. Herring were experimentally located with an echo sounder in British Columbia waters about 1939, and sardine seiners off the Maine coast reported success in locating fish by this method on a practical, commercial scale.

World War II, however, brought the perfection of infinitely more sensitive and flexible sounding devices. These instruments, developed for the detection of submarines, added the further advantage of being able to search the water on all sides of the ship, in addition to areas directly beneath the keel. During the war, despite the necessity for military secrecy, the United States navy permitted scientific observers of the fish and wildlife service to test the utility of some of these sonic devices in detecting schools of fish. These tests were extended in 1946, when the sardine industry chartered a vessel equipped with "sonar." Preliminary results of this experiment indicated that it was entirely feasible to locate schools of fish, even though they were too far below the surface to be detected by ordinary means. Early tests did not, however, disclose a means of distinguishing between pilchards and the smaller anchovies, which in 1946 had little commercial value in the U.S.

Conservation.—In some respects, conservation of the fishery resources of the world suffered a severe setback as a

result of the war. Because of the acute need for a large and immediate increase in production, some nations felt constrained to relax or abandon conservation measures already in effect. Several international organizations whose efforts had been directed to promoting conservation of marine resources were obliged to become relatively or completely inactive for the duration of the war. Among these were the Conseil Permanent International pour l'Exploration de la Mer, the North American Council on Fishery Investigations and the Conseil International pour l'Exploration de la Mer Méditerranée.

Despite these obstacles, the decade was remarkable for the number of treaties and agreements concluded or put into effect for the conservation of marine resources.

A treaty for the conservation of the Pacific halibut was concluded between the United States and Canada in 1937. Through the instrumentality of this and a previous treaty, the International Fisheries commission was established as a regulatory body with jurisdiction over the Pacific halibut fisheries off the coasts of Alaska, Canada and the United States. Through its control of the seasons, places and intensity of halibut fishing, the commission succeeded by the late 1930s in restoring the seriously depleted halibut fishery to productive levels.

Another body with powers to investigate and regulate a fishery prosecuted by more than one nation was the International Pacific Salmon Fisheries commission, established by a treaty between the United States and Canada. The treaty received final ratification in 1937. Its object was the restoration and conservation of the sockeye salmon fisheries of the Fraser river.

During the period 1937-46 several international conferences were held to strengthen and extend already existing treaties for the conservation of the dwindling whale resources of the world. The resulting conventions and subsequent amendments provided an international co-operative method of regulating the capture and processing of whales throughout the world. Despite these efforts, whales were considered by the close of the period under consideration to have come perilously near to extinction.

A treaty for the development, protection and conservation of the seriously depleted Great Lakes fisheries was signed on behalf of Canada and the United States on April 2, 1946, but awaited ratification by the Canadian parliament and the United States senate. Also awaiting ratification was an international convention adopted in London in April 1946, by representatives of 14 European nations, relating to the problem of overfishing in the North sea and other waters adjacent to the British Isles. (See below.)

On the negative side, an international treaty for the conservation of the fur seals of the North Pacific ocean, to which the United States, Canada, the U.S.S.R. and Japan were signatories, was abrogated by Japan on Oct. 23, 1940. Thereafter, the United States and Canada concluded an interim agreement which maintained the provisions of the 1911 treaty insofar as the nationals of the two countries were concerned. The soviet union was not a signatory to this provisional agreement, but continued to follow the stipulations of the original treaty. It was anticipated that a new treaty would be formulated as soon as world conditions should permit.

The right and intent of the United States, unilaterally or by international agreement, to establish conservation zones in certain areas of the high seas and to regulate fishing therein when necessary, was asserted in a proclamation of the president of the United States on Sept. 28, 1945. The president of Mexico issued a similar proclamation on Oct. 29, 1945.

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The British Industry.—The opening years of the decade 1937-46 saw the British fishing industry in an unsettled and in many ways depressed state. The opening up of the distant fishing grounds in the far north around Bear Island and elsewhere had resulted in the flooding of the market with cheap cod. Prices were depressed all around. The owners of the distant water vessels had for their own protection to lay some of them up and to limit the catch of the remainder. The near- and middle-water trawlers were fishing at a heavy loss, while the inshore men, affected by the falling prices, were not making a living wage, and the process of the drift from the fishing industry to other industries went on apace. As regards the great herring fisheries, the difficulty of securing foreign markets for all the supplies caught showed no sign of being successfully surmounted. Such was the state of affairs in the summer of

Few industries are so vitally or directly affected by war operations as that relating to fisheries, especially where an island race is concerned that not only depends on the harvest of the sea as an essential part of its food supply but also has to depend on the personnel of the industry as a reservoir for manning its navy.

The extent to which the British fishing industry was affected could be appreciated from the following figures. In 1939 the deep sea trawling fleet of Great Britain, which in peacetime caught anything up to 95% of the nation's fish supply, other than herrings and other pelagic fish, was some 1,472 strong, of which 1,030 operated from English

and Welsh as distinct from Scottish ports. Many of these vessels were of considerable age on the outbreak of World War II, mainly owing to the depression which had overtaken the section of the fleet known as the near- and middle-water fleet that fished comparatively near waters like the North sea. On the other hand, there was a fine fleet of about 250 distant water trawlers at Hull with about 50 more at Grimsby, many of which were of the latest type, designed to go to Bear island and the far north, and capable of staying out for 30 days or more. It was hardly surprising, therefore, that even before the actual outbreak of World War II, the admiralty set about purchasing nearly 100 of the most up-to-date trawlers as being highly suitable for anti-submarine, minesweeping and other operations. Then, when war broke out, requisitioning became the order of the day and continued up to the end of the conflict. In fact, it ceased only because every vessel that could be used for naval service had been taken. Altogether more than 1,000 vessels were either purchased or requisitioned at one time or another out of the British trawling fleet, and the small number of trawlers still left fishing were mostly antiquated crocks that in peacetime would have hardly been allowed to go to sea. The steam-drifter fleet for herrings and other pelagic fish was reduced from 662 to fewer than 200.

Finally, about 90 English and Welsh inshore boats were taken, and in Scotland about 235. As, however, in England and Wales the catch of these little vessels in normal times was less than 5% of the total whitefish catch, the effect on the food supply was comparatively slight, although every pound of fish was of value.

The real loss to the food supply was in whitefish. Even if the herring fleet of drifters, steam and motor, had not been materially decreased, it is doubtful whether they would have been able to continue fishing since so many of the herring fishing areas were closed to fishing. The herring shoals are found all round the British coasts, but perhaps the most important grounds are off the east coast, where the fleets normally work from north to south, ending with the great East Anglian season from Great Yarmouth and Lowestoft that starts in October.

It was only in the first year of the war that the East Anglian season was possible and then only on a greatly reduced scale.

A mine belt was established right down the east coast at varying distances from the coast up to 30 mi., but much of this mine belt lay right across the herring grounds, and even where it did not do so there was scarcely enough room for the fishing to be carried on without interfering with the convoys and shipping that plied unceasingly up and down the coast.

Apart from this, however, in normal times more than 50% of the herring catch of some 5,000,000 cwt. was exported in pickled or cured form to countries like Germany, Poland and Russia, so that the reduced total catch was sufficient to meet a large part of the requirements of the home consumer, whether in the form of fresh herrings, bloaters or kippers.

No fewer than 383 trawlers were lost from those either on admiralty service or still left fishing, and at one time in the war years the total number of trawlers left fishing was only about 370, and as these were of the oldest vintage, they could only keep on fishing with their aged crews by the aid of heavy and long-drawn-out repairs which restricted greatly their fishing time at sea. Of the crews of vessels still left fishing, no fewer than 827 men (including

88 skippers) lost their lives. It was no easy or unhazardous task to bring fish supplies to the waiting queues of housewives.

A number of vessels from France, Belgium, Denmark, the Netherlands and Norway sought refuge in British ports and fished from them to the great advantage of the British food supply; with a few exceptions all these vessels returned to their home ports toward the end of 1945 and in the early months of 1946.

Apart from the above, the only foreign fishing vessels which continued to land fish in Great Britain in any quantity during the war were Icelandic and Faroese. Iceland had a prewar quota of 250,000 cwt. of fresh fish, but throughout the war years succeeded in landing either direct from fishing vessels, or by carrier, anything up to 3,000,000 cwt. per annum. With the end of the war in 1945, a move was made by Denmark, Sweden and Norway to reopen the landing of fish in British ports, and so far as landing facilities were available this was permitted, but to this policy the British fishing industry was not unnaturally much opposed. It had always been the claim of the British industry that so far as whitefish was concerned it could by its own efforts supply the home consumer with all the fish wanted, and it was hostile, even before the war, to any foreign imports of fresh fish, and wished to see them entirely eliminated. So long, however, as food was short, it was impossible to refuse this essential supply, and at the end of the war it was contemplated that many months would elapse before the British industry could achieve landings 100% of prewar years.

The following paragraphs show the landings of British demersal fish and the total supply of British and foreign demersal fish during the war years, as compared with similar landings in 1938.

In 1940 British vessels accounted for about 31% of prewar landings, but foreign landings brought the total up to 48%. Corresponding figures for 1941 were 24% British, 40% (with foreign); 1942, 30% British, 48% (with foreign); 1943, 30% British, 49% (with foreign); 1944, 31% British, 55% (with foreign); 1945, 48% British, 73% (with foreign).

In 1946, when requisitioned trawlers began to come back in large numbers reconditioned for fishing, catches rose rapidly, and the weekly landings up to the middle of the year frequently exceeded 100% of prewar, if foreign landings are included.

With the end of hostilities many problems faced the industry in the sphere of rehabilitation, and these problems were not peculiar to Great Britain. First and foremost was the urgent necessity of getting the many fishing vessels on naval service derequisitioned and then reconditioned for fishing, an operation which took several months. Then there was the pressing need for men to man the vessels as they came back; added to this was the need for more labour right down the line from the port where the fish was landed to the fishmonger's slab where it reached the consumer. Thirdly, the war had made such demands upon the railways that the provision of additional fish trains and trucks became a difficult matter; nevertheless, the provision of improved services was comparatively rapid. Shipbuilding facilities were extremely limited, but, even had this not been the case, there was an unwillingness on the part of the trawler owners to embark upon new building at a price more than double the prewar figure. Nevertheless, by the middle of 1946 some 25 or so trawlers were either building or completed.

One of the most serious problems that faced a large sec-

tion of the British trawling industry was the danger that as the result of the opening up of the fishing grounds closed during the war, e.g., the North sea, these would soon be fished to capacity, as they were after World War I, and with all the disastrous results that followed the overfishing which then took place.

As the result of the conclusions of a committee of scientist set up early in the war, the government convened an international conference on overfishing in London in April 1946, and its findings were fully recorded in a White Paper. The 14 countries represented agreed to a convention setting out the size of the mesh of nets, the use of which was permissible and the length below which certain fishes should not be permitted to be retained on board fishing vessels, landed or sold. This convention, which awaited ratification and was to come into operation two months after the last ratification was in, was an advance upon the agreement reached in London in 1937 which, however, never fully came into operation. It was clear that the representatives present were not prepared to adopt any other expedient to prevent overfishing, e.g., a reduction of aggregate tonnage, but in the final act of the conference the British government was asked to convene a standing advisory committee consisting of one delegate and one expert from each country to study the various expedients in detail and to report within a year from April 1946.

The problem of overfishing in the North sea and elsewhere was one of the greatest facing the many countries who depend so much upon their respective fishing industries. (See also FOOD SUPPLY AND WORLD WAR II; MARINI: BIOLOGY; VITAMINS.)

(A. T. A. D.)

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Fisheries, Bureau of

See WILDLIFE CONSERVATION.

Fission, Nuclear

See Physics.

Fiume

See TRIESTE; YUGOSLAVIA.

Fives

See HAND BALL.

Five-Year Plans

See Union of Soviet Socialist Republics.

Flandin, Pierre Etienne

), French attorney and politician, Flandin (1889was under-secretary of state for air in 1920, minister of commerce in 1924 and 1929-30, of finance in 1931-32 and of public works in 1934. On Nov. 8, 1934 he became premier. Refused the special powers he sought to combat the financial crisis in May 1935, he resigned and served as minister of state in succeeding cabinets until the formation of the Blum government in 1936. A visit to Germany in 1937 was followed by his sponsorship of a Franco-German alliance. He was openly friendly to Benito Mussolini and Adolf Hitler, opposed the popular front's policy of "collective security" and rearmament, and opposed the French declaration of war against Germany in Sept. 1939. He was foreign minister in the Pétain government from Dec. 14, 1940 to Feb. 9, 1941, when he was replaced by Adm. Jean Darlan. In March 1945 his property was sequestered by the high court in Paris, and he was accused of having endangered the safety of the state. In July 1946, a sentence of five years of "national unworthiness" was passed on

See LINEN AND FLAX.

Flaxseed Oil

See VEGETABLE OILS AND ANIMAL FATS.

Flood Control

During the ten-year period 1937–46, the United States adopted a long-range program of flood control on a nation-wide, intrabasin basis.

The Flood Control act approved June 22, 1986, had established a definite policy for federal participation in the construction of flood-control projects throughout the nation in co-operation with the states, political subdivisions thereof or other responsible local agencies. About 270 flood-control projects, with a total estimated construction cost of \$310,000,000, and about 240 preliminary examinations and surveys for flood control were authorized. The initial funds for carrying out the provisions of the act were appropriated July 19, 1937, although money previously made available from the Emergency Relief Appropriation act approved June 22, 1936, permitted the war department to proceed with the preparation of detailed plans and definite project estimates. Within the limits of available funds from the Appropriation act approved July 19, 1937, actual construction was placed under way on many of the projects for which local interests had previously fulfilled the requirements of local co-operation established under the law. Additional funds under the Appropriation act approved June 11, 1938, provided means for continuing the projects and for the initiation of others.

The Flood Control act of 1936 was amended in 1937 to authorize construction of levees, flood walls, and drainage structures for the protection of cities and towns in the Ohio river basin, the projects to be selected by the chief of

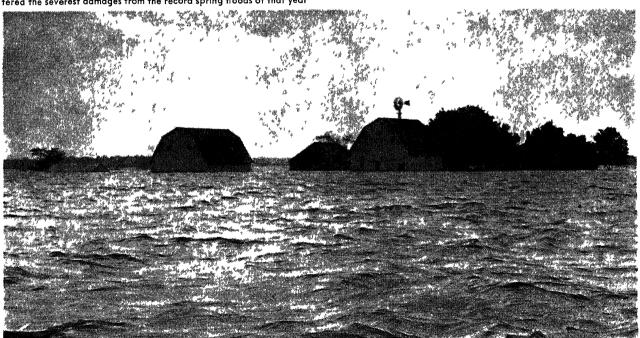
Flooded farmland on the Illinois side of the Wabash river west of Vincennes, Ind., in May 1943. Of the midwestern states, Illinois suffered the severest damages from the record spring floods of that year

engineers, U.S. army, with the approval of the secretary of war, at a construction cost not to exceed \$24,877,000. The need for these protection measures was forcefully demonstrated by the disastrous flood of Jan. 1937. This act also included authority for flood-protection work at Memphis, Tenn., at an estimated construction cost of \$9,000,000, and further directed that preliminary examinations and surveys of some 114 rivers and streams be made throughout the country for the purpose of determining the need, location and type of flood-protection work.

Under the same acts, congress reaffirmed that the federal government should participate in the improvement of navigable waters or their tributaries for flood-control purposes, if such projects were economically justified and if the lives and social security of people were otherwise adversely affected. These acts also specified the local co-operation required for the projects authorized therein.

These requirements of local co-operation, in brief, were as follows: (1) Dam and reservoir projects authorized in any flood-control act were to be constructed entirely at the expense of the United States and maintained and operated with the use of federal funds. No local co-operation was required for dam and reservoir projects unless specifically prescribed by special provisions of law. (2) For local floodprotection projects, except channel improvement or channel rectification projects authorized by the acts of 1936, 1937 and 1938, local interests must provide without cost to the United States all lands, easements, and rights-of-way necessary for the construction of the projects, hold and save the United States free from damages due to the construction works, and maintain and operate all the works after completion in accordance with regulations prescribed by the secretary of war. Channel improvement and channel rectification projects authorized by the acts of 1936, 1937 and 1938 were to be built entirely at federal expense, and no local co-operation was required. Exceptions to these general rules were provided by law in the case of certain specific projects.

A policy for the development of recreation facilities in connection with reservoirs under the control of the war de-



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Sandbags being piled up along the levees at Cairo, III., against the destructive floodwaters of the Mississippi in 1937

partment was defined in the 1944 Flood Control act, which stated that the chief of engineers under the supervision of the secretary of war was authorized to construct, maintain and operate public park and recreational facilities in such reservoir areas, and to permit the construction, maintenance and operation of such facilities. The act further provided that the secretary of war was authorized to grant leases of land including structures or facilities thereon in reservoir areas for such periods and upon such terms as he might deem reasonable; that the water areas of all such reservoirs should be open to public use generally without charge for boating, swimming, bathing, fishing, and other recreational purposes, and ready access to and exit from such water areas along the shores of such reservoirs should be maintained for general public use when such use was determined by the secretary of war not to be contrary to the public interest. This act further provided that no use of any such area should be permitted which was inconsistent with the laws for the protection of fish and game of the state in which the area was situated.

The Flood Control act approved June 28, 1938, authorized additional flood-control improvements in 19 separate river basins or portions thereof, including an amendment to the project for floodways in the lower Mississippi river and the execution of examinations and surveys for flood control on 105 rivers and streams. The sum of \$375,000,000 was authorized for construction of the projects included in this act.

The policy for the development of reservoirs to provide for best possible utilization of the water resources of the nation was broadened by the 1944 Flood Control act. This act stated that whenever the secretary of war determined upon recommendations by the secretary of interior that any dam and reservoir project operated under the direction of the secretary of war might be utilized for irrigation

purposes, the secretary of the interior was authorized to construct, operate and maintain under the provisions of the federal reclamation laws such additional works in connection therewith as he might deem necessary for irrigation purposes. Such irrigation works might be undertaken only after a report and findings thereon had been made by the secretary of the interior as provided under the reclamation laws and after subsequent specific authorization of congress (by an authorization act).

The disposal of electric power and energy generated at reservoir projects under the control of the war department, and in the opinion of the secretary of war not required in the operation of such projects, was prescribed by congress in the Flood Control acts approved Dec. 22, 1944. In accordance with this legislation, such electric power and energy was to be delivered to the secretary of the interior, who was to transmit and dispose of this power and energy in such manner as to encourage the most widespread use thereof at the lowest possible rates to consumers consistent with sound business principles, the rate schedules to become effective upon confirmation and approval by the Federal Power commission. The legislation stated that preference in the sale of such power and energy should be given to public bodies and co-operatives.

The largest single unit and an outstanding example of the nation's intrariver basin development for flood control and allied benefits was the broad program authorized by congress in 1943 for control of floods and multiple-purpose utilization of the vast Missouri river system. Estimated to cost ultimately \$1,500,000,000, the combined plan provided for the building of 105 reservoirs on the main stream and its principal tributaries. The reservoirs were to have an aggregate capacity of about 100,000,000 acre-feet of water to serve the needs of the entire basin, comprising 530,000 sq.mi. During the period 1937–1946, floods in the basin cost 234 lives and a total of \$200,000,000.

Actual construction of the reservoirs was delayed by World War II, but work was begun on five of the projects in 1946. These were Garrison dam, approximately 75 miles upstream from Bismarck, N.D., Fort Randall dam, about 60 miles west of Yankton, S.D., Kanopolis dam on the Smoky Hill river in Kansas, the Harlan County dam on the Republican river in south central Nebraska, and the Cherry Creek dam near Denver, Colo. The key project in the system, Garrison dam was to impound the largest volume of water in the world behind an earth-fill dam. When completed, it was to have a crest length of more than two miles and a base width slightly exceeding one-half mile, exclusive of a 1,250-ft. impervious upstream blanket. It was to be 210 ft. high, and at normal pool elevation of 1,850 ft., to impound approximately 23,000,000 acre-feet, inundating 390,000 acres of land and creating a reservoir 200 miles long. By comparison, Fort Peck dam, placed in operation by the corps of engineers in 1938 in Montana, had a maximum reservoir capacity of 19,000,000 acre-feet, a 2-mile crest and inundated 245 acres.

At the end of June, 1946, 50 reservoirs and 135 local protection projects were in operation throughout the United States. In addition to previous authorizations, congress in the Flood Control act approved July 24, 1946, authorized expenditures by the war department amounting to \$772,-000,000 for approximately 123 additional flood control and multiple-purpose projects. With the passage of the 1946 Flood Control act, congress had approved authorizations totalling \$2,452,400,000 for the construction of about 770 reservoirs and local protection projects. In the period from 1937 through July 30, 1946, funds totalling \$835,421,900 were appropriated for flood control (general) purposes. Of the amount, \$769,472,000 was for the construction and detailed planning of projects. The remaining \$65,949,900 was for maintenance of completed projects, surveys and miscellaneous items.

The authorized projects collectively constituted a comprehensive co-ordinated plan for the development of the river basins of the U.S. to provide economical flood protection and allied benefits for centres of industry and population, millions of acres of rich, agricultural land and vital lines of communication. In addition to their use for flood control, many of the reservoirs provided favourable possibilities for the development of hydroelectric power, stream flow regulation, water conservation, recreation and other water uses.

A number of projects were completed during 1946, including the Indian Rock dam in Pennsylvania and local protection works at East Peoria, Ill., Sauvie Island, Ore. and in the Skamokawa Creek area, Washington.

After the close of hostilities in the Pacific, congress appropriated \$84,659,000 in the First Deficiency act for the fiscal year 1946, and \$138,901,000 in the war department Civil Appropriation act for the fiscal year 1947, for continuing work on flood-control projects deferred during the war emergency and for the initiation of new, urgently needed projects. During 1946, work which had been stopped during the war in order to conserve equipment, materials and manpower, was resumed on the flood protection projects in river basins throughout the U.S. These projects included the Lisle and Elmira, New York, local protection projects in the headwaters of the Susquehanna river; the Plymouth, Wilkes-Barre, Williamsport and York, Pennsylvania local protection works along the middle and lower Susquehanna river; the Wallace Lake dam and reservoir in the Red river basin, Louisiana; the John Martin dam and reservoir, Colorado; the Blue Mountain dam and reservoir, Arkansas; Canton dam and reservoir, Oklahoma,

in the Arkansas river basin; the Clearwater dam and reservoir, Missouri, in the White river basin; local protection at the Kansas City and the Kanopolis dam and reservoir on the Smoky Hill river in Kansas, in the Missouri river basin; local protection works at Cincinnati and Massillon, Ohio, the Cache river diversion unit at Mounds and Mounds City, Ill., and the Dale Hollow and Center Hill dam and reservoir projects on tributaries of the Cumberland river, all in the Ohio river basin; Los Angeles river channel improvement and the Santa Fe dam, both in the Los Angeles county drainage area, California.

Projects previously authorized, and for which plans and specifications were prepared during World War II, were initiated at the following localities: local protection at Nashua, N.H., in the Merrimack river basin, the Union village dam and reservoir on the Ompompanoosuc river in Vermont; local protection works at Whitney Point, N.Y., and the Almond 'dam and reservoir, both units of the project for southern New York and eastern Pennsylvania; Sunbury, Pa., in the Susquehanna river watershed; preliminary work on the Clark-Hill dam and reservoir project in the Savannah river basin, Georgia and the Allatoona dam and reservoir in the Coosa river basin, Georgia; preliminary work in connection with the Narrows dam and reservoir on the Little Missouri river, Arkansas; local protection for Shreveport, La., in the Red river basin; Hulah dam and reservoir in Oklahoma, Fort Gibson dam and reservoir, Oklahoma, Fall River dam and reservoir, Kansas, Wister dam and reservoir, Oklahoma, all in the Arkansas river basin; preliminary work at the Bull Shoals dam and reservoir, Arkansas, in the White river basin; Harlan county dam and reservoir on the Republican river, Nebraska, Cherry Creek dam and reservoir for the protection of Denver, Colo., local protection works at Kensler's Bend, Schuyler and Omaha, Neb., and Council Bluffs, Iowa, and preliminary work in connection with the construction of the main Missouri river dams at the Fort Randall and Garrison sites, all in the Missouri river basin; Delaware dam and reservoir, Ohio, Dewey dam and reservoir, Kentucky; and preliminary work in connection with the Conemaugh dam and reservoir project, Pennsylvania; local protection works at Newport, Ky., Punxsutawney, Pa., Parkersburg and Elkins, W.V., all in the Ohio river basin; preliminary work in connection with the Dorena dam and reservoir in the Willamette river basin, Oregon.

In addition to the general flood-control program, work on the projects authorized separately for the alluvial valley of the Mississippi river and for the Sacramento river, California, was continued to protect agricultural lands, communities and principal arteries of communication. (See Dams; Forests; Irrigation; Meteorology; Soil Erosion and Soil Conservation; Tennessee Valley Authority.)

(R. A. Wr.)

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Great Britain.—Provisions for flood control in Great Britain included river improvement works, the creation of

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reservoirs, and systematic gauging of rivers and their tributary streams. Protection by means of embankments was, in some cases, a measure of control, but usually one of local protection only. Eighty schemes approved by the minister of agriculture were in hand in 1937, covering works of land drainage, river improvement and river flow control. The total cost was estimated at about £7,000,000, state-aided by grants ranging from 15% to 75% of the cost.

No important work of flood control was carried out for the Thames during 1937–46, but the influence of works of river-channel improvement, completed in 1935, may have been considerable. They included: a new cut, or flood channel, across a long bend (the cut being 100 ft. in top width and 1,463 yd. long); the widening of the channel at a number of places; and the enlargement of Teddington weir. (See *Engineer*, London, June 28, 1935.)

There were two schemes for the creation of reservoirs on affluents of the Thames. A. B. Buckley's scheme would provide four reservoirs of aggregate capacity 6,378,000,000 cu.ft. to keep the discharge of Teddington weir down to a maximum of 4,500,000,000 gal. a day. Water would also be available for the augmentation of London's water supply, to a useful and, perhaps, fully adequate extent. G. Bransby Williams' scheme was for the ensuring of ample supplies to the reservoirs of the Metropolitan water board, sufficient capacity for flood control (10,700,000,000 cu.ft. in a total capacity of 16,500,000,000 cu.ft.) being made available. Bransby Williams also put forward proposals for similar provisions for the control of the flow of the Severn and utilization of water-electric power, by the creation of five reservoirs of aggregate capacity 47,000,000,000 cu.ft., of which 31,000,000,000 would be maintained for flow regulation. Systematic gaugings of the flows at different points on the river provided valuable information.

The catchment board completed in 1946 a comprehensive scheme of river improvement for the river Nene, then canalized as far as Northampton by 37 weirs with locks. The scheme included all necessary provisions at weirs, and installed nine river-gauging stations on the main stream and its tributaries, some of which were equipped with automatic discharge recorders. (For notable floods of the decade 1937–46, see DISASTERS.)

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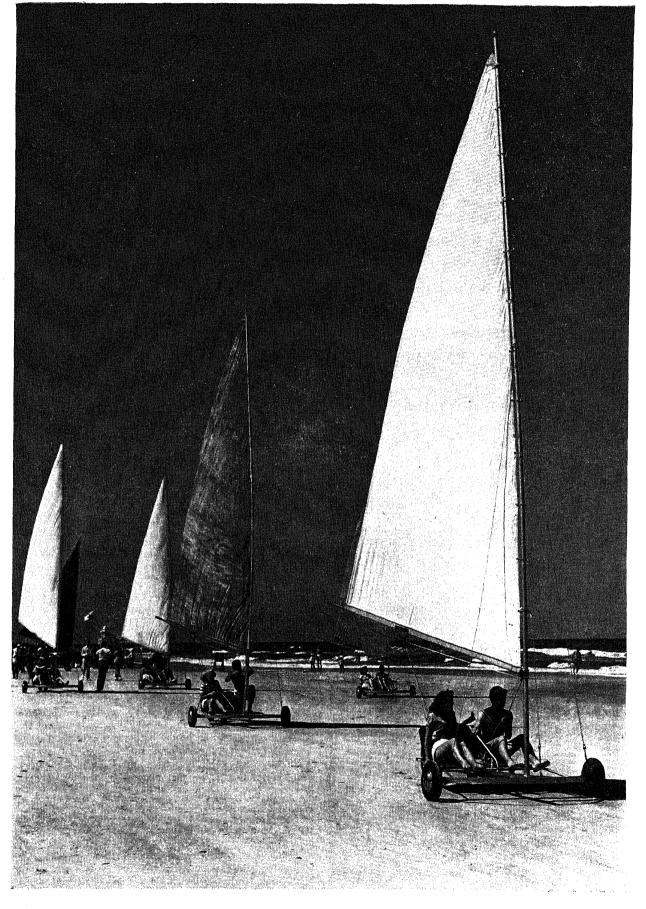
Florida

An extreme southeastern state of the United States, called the "Peninsula state" because of its peculiar outline, Florida has a coast line greater than that of any other state, extending 472 mi. along the Atlantic and 672 mi. along the Gulf of Mexico. Area, 58,560 sq.mi., of which 4,298 sq.mi. are water surface; population (1940) 1,897,414, of which 1,045,791 were urban and 851,623 were rural; 1,384,365 white and 513,049 Negroes. Only about 60,000 were foreign born. Capital, Tallahassee (16,240 in 1940). The larger cities are Jacksonville (173,065), Miami (172,172) and Tampa (108,391). On Nov. 1, 1943, the bureau of the cen-

Florida: Statistical Data

Table I.—Education (Public)								
1938 1940 1942 1944 Elementary school pupils 311,625\ 306,988 386,889 389,676								
Elementary school pupils								
Y II II D.P. Welfers								
Table II.—Public Welfare (Money figures in thousands of dollars)								
1937 1938 1939 1940 1941 Cases on general relief 8,600 8,491 8,070 9,820 8,343								
Cases on general relief								
Cost of old-age pensions \$472 \$423 \$495 Dependent children receiving aid 5,877 9,641 10,974 Blind receiving aid								
Blind receiving aid 2,217 2,351 2,536 Workers covered by unemploy-								
ment compensation								
Table III.—Communications								
(Money figures in thousands of dollars) 1937 1938 1939 1942 1944 1945								
Total highway mileage								
Expenditures on highways \$10,579 11,221 23,329 10,712 17,640 14,515 Railroad mileage 5,291 5,281 5,225 6,000 6,000 6,000								
Tuble IV Parking and Finance								
Table IV.—Banking and Finance (Money figures in thousands of dollars)								
1937 1938 1939 1940 1942 1945 State revenues \$49,397 \$60,668 \$67,423 \$60,697								
State expendi- tures \$49,290 \$52,473 \$51,043								
Number of banks 162 163 170 173 Total bank								
deposits \$343,400 \$327,400 \$393,300 \$454,400 . Number of								
nat'l banks 53 53 52 52 56 Deposits of								
natl. banks . \$248,827 \$268,505 \$315,000 \$378,082 \$448,871 \$1,113,055								
Table V.—Agriculture								
(All figures in thousands) 1937 1938 1939 1940 1941 1945								
Acreage, principal crops 1,548 1,566 1,579 1,620 1,521 Cash income from crops \$116,800 \$91,500 \$128,304 \$108,871								
Income from government payments \$1,300 \$2,600 \$3,865 \$4,068								
Farm value of agricultur- al crops \$74,661 \$65,113 \$78,018 \$89,176								
Leading agricultural crops (bu.):								
Avocados (tons) 2.1 2.2 2.5 .8 Corn 7,890 8,452 6,038 9,031 7,533 6,900								
Oranges (boxes) . 14,000 23,300 15,900 24,000 21,400 Oranges (boxes) 26,200 33,300 28,000 31,100 31,300								
Pecans (lb.)								
Potatoes, white 4,114 4,488 3,480 4,312 3,190 5,285 Strawberries (crates) . 572 525 765 504								
Sugar cane (short tons) 643 861 745 983 119 1,111 Tobacco . . 16,786 19,684 23,760 16,123 12,125 20,413								
Table VIII - Manufacturian								
Table VI.—Manufacturing (Money figures in thousands of dollars)								
Wage earners 1937 1939 52,005 52,732								
Wage earners 52,005 52,732 Wages paid \$36,501 \$37,883 Value manufactured products \$217,045 \$241,539								
Leading manufactured products (value): Cigars \$24.972 \$26.240								
Preserved fruits and vegetables 16,221 15,643 Fertilizers 14,392 15,035								
Bakery products 13,571 14,164								
Printing and publishing (newspapers and periodicals)								
Products of sawmills and veneer mills								
Table VIII Minard Backetter								
Table VII.—Mineral Production (All figures in thousands of dollars)								
1937 1938 1939 1940 1943 1945 (est) (est)								
Value of mineral production \$13,812 \$12,867 \$13,060 \$14,000 \$15,000								
Leading mineral products: Phosphate rock 9,143 8,774 7,893 7,741								
Stone 1,409 1,223 1,463 Lime								
Clay 133 193								
								

Florida's first beach yachting regatta. Sand sailing became popular after World War II and was added to the sports open to vacationists in Florida





sus estimated the population of the state at 2,012,046.

The state elective administrative officers, in office in 1937, and whose terms expired in Jan. 1941, were Fred P. Cone, governor; R. A. Gray, secretary of state; Cary D. Landis, attorney general; J. M. Lee, comptroller; W. V. Knott, state treasurer; Colin English, superintendent of public instruction; and Nathan Mayo, commissioner of agriculture. George Couper Gibbs succeeded Cary D. Landis, who died in his term of office on May 10, 1938, as attorney general.

In the 1940 presidential election, Roosevelt received 360,407 votes; Willkie received 126,412. All five of the state's representatives in congress and Senators Charles O. Andrews and Claude Pepper were Democrats. Senator Andrews was re-elected in Nov. 1940. Pepper was elected in 1938.

Principal state officers in 1941, whose terms expired in Jan. 1945, were: Spessard L. Holland, governor; R. A. Gray, secretary of state; J. Thomas Watson, attorney general; J. M. Lee, comptroller; J. Edwin Larson, state treasurer; Colin English, superintendent of public instruction; and Nathan Mayo, commissioner of agriculture.

In the 1944 election the voters approved a constitutional amendment called the "right to work" amendment, despite the opposition of organized labour. There were 339,377 Democrat and 143,215 Republican votes cast in the 1944 presidential election.

The state elective administrative officers in 1945, whose terms were to expire in Jan. 1949, were as follows: Millard Caldwell, governor; R. A. Gray, secretary of state; J. Thomas Watson, attorney general; J. M. Lee, comptroller; J. Edwin Larson, state treasurer; Colin English, superintendent of public instruction; and Nathan Mayo, commissioner of agriculture.

State elective administrative officers in 1946, whose terms were due to expire in Jan. 1949, were as follows: Millard

Florida coast line lashed by the tropical hurricane of Sept. 1945. Travelling at a peak velocity of 143 m.p.h., it swept through southern Florida destroying crops, buildings and communications. Damage was estimated at \$50,000,000

Caldwell, governor; R. A. Gray, secretary of state; J. Thomas Watson, attorney-general; C. M. Gay, comptroller; J. Edwin Larson, state treasurer; Colin English, superintendent of public instruction; and Nathan Mayo, commissioner of agriculture.

(J. M. L.; X.)

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Flour

While it was true that World War II exerted a powerful influence upon flour milling and the quality of flour throughout the world, it was significant that in English speaking countries an important trend toward improving the nutritive quality of flours had been under way for several years prior to the outbreak of hostilities. The movement to "enrich" flour dated from a meeting held March 12, 1936, when the Committee (Council) on Foods of the American Medical association discussed the fortification of foods and adopted the following policy:

If in exceptional cases a general need for vitamin (or inorganic salt) intake above that afforded by the usual mixed diet of common foods is indicated, the Council shall require (a) acceptable and convincing evidence that there is need for enhanced amounts of vitamins (or inorganic salts) in the general food supply, and (b) that the food vehicles proposed for the distribution of such vitamins (and/or inorganic salts) are suitable and appropriate.

Although no specific definition of fortified or vitamin enriched foods was attempted at that time, it was understood that "in general a fortified food was one in which the per-

centage of mineral elements or the unitage (concentration) of vitamins has been made significantly beyond that of the same food as it exists in nature. This enhancement of the vitamin (and/or the inorganic salt) content is brought about by the addition of a concentrate or rich source of the material salt or vitamins themselves."

The fortification, or "enrichment" movement continued to gain favour and impetus until in 1940 the reality of war on the European continent precipitated three major developments: (1) the decision of the British government in July of that year to fortify flour and bread with thiamin; (2) the decision of the Subcommittee on Medical Nutrition, appointed in the National Research council (N.R.C.) to recommend reinforcement (fortification) with thiamin of all white flour purchased for the army and navy of the U.S. and (3) a scheduling, for Sept. 1940 by the Food and Drug administration, of public hearings to consider a proposal for a standard for identity of flour.

Subsequent meetings and discussions produced substantial testimony indicating the need for vitamin B₂ (riboflavin), niacin (nicotinic acid) and iron, in addition to thiamin. In the U.S. the fortification of bread by means of added vitamins gained rapidly in popularity, and the term "enriched" was finally agreed upon as most acceptable to the Food and Drug administration; all parties subsequently agreed to it. By the close of 1942, support of the enrichment program had progressed until 75% to 80% of all family flour as well as baker's bread was receiving voluntary enrichment. A War Food administration order, enacted in Jan. 1943, required the enrichment of all baker's white bread and was later extended to include rolls.

That the enrichment of family flour and baker's white bread contributed significantly to the improvement of the North American diet was supported by the testimony of Dr. N. Jolliffe of the New York University College of Medicine. At a public hearing held Jan. 21, 1943, by the War Food administration Dr. Jolliffe testified as follows:

I attribute to bread enrichment a marked and unmistakable decrease in the incidence of florid beriberi and florid pellagra in my wards at Bellevue Hospital. In 1938–39 little bread was enriched; in 1942–43 seventy-five percent or more was enriched in New York City. This has been accompanied by a decrease of three-fourths (75%) in our cases of florid beriberi, and of two-thirds (66%) in florid pellagra.

The specifications relating to the enrichment of flour, dated July 1, 1943, to become effective Oct. 1, 1943, were as indicated in Table I.

Table I.—Nutrient Requirements for Enriched Flour

	Mınimum	Maximum
Thiamin	2.0	2.5 mg. per lb
Riboflavin	1.2	1.5 ,, ,, ,,
Niacin	16.0	20.0 ,, ,, ,,
Iron	13.0	16.5 ,, ,, ,,
Calcium, optional*	500	625 ,, ,, ,,
Vitamin D, optional*	250	1,000 U.S.P. units
*Required in self-rising flour	500	1,500 mg, per lb.

Effects of Enrichment.—Nutritional authorities agreed that "the merits of the program of bread and flour enrichment lie in the possible immediacy and universality of its effect" (National Research Council Bulletin). Russel M. Wilder and Robert R. Williams of the N.R.C. explained further as follows:

Bread and flour are so universally consumed in significant amounts—that the effect of improvement in their nutritional quality will be almost universally felt insofar as popular dietaries require this sort of improvement. On the average,—in the U.S.,—they are consumed daily to the extent of the equivalent of $6\frac{1}{2}$ ounces of flour, and furnish 25% of the caloric intake.

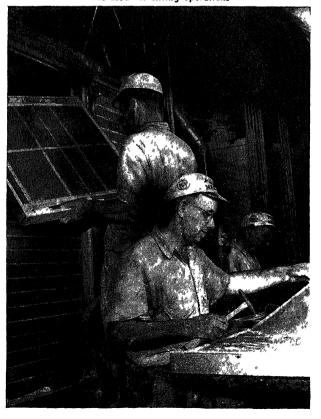
In addition to the extensive nutritional studies both indicating and confirming the necessity for supplementing the average diet with vitamins of the B complex (thiamin and riboflavin), a study by Ruth F. Harrell (1943) brought to light additional significant effects of providing adequate thiamin. It presented data to show that a supplementation of 2 mg. per person per day increased the learning ability of children (from 4 to 20 years of age), by 7% to 87% for a range of 18 activities selected for objectivity of scoring.

It was concluded that "the varying gains combined indicate that in general in this situation the group with the added thiamin improved more than the control group by about 27 percent" (Ruth F. Harrell, Effect of Added Thiamine on Learning, Columbia University Press, 1943).

Dark Flours and Long Extraction Flours.—The century-old controversy over "White versus Brown Flour" was well chronicled by Dr. F. L. Dunlap in a monograph (1945) based on a thorough survey of contemporary literature. While during the decade 1937–46, the relative merits of long versus short extraction flours were exhaustively argued, it was at last conclusively and fairly demonstrated that man, when making a free choice, had through the centuries turned to white flour in preference to dark flour for his nutriment. Over a period of about 20 years (in the U.S.) the sale of dark flours, i.e., greater than 85% extraction, had remained at a fairly constant level of 2 to 3% of the total flour output.

For many years there had been a popular misconception that the introduction of steel rolls, in replacement of the old-fashioned burrstones, was responsible for a general shift from dark to white flour. While it is true that the use of steel rolls helped make short extraction flours whiter, this was true only because the steel rolls were capable of

Millers restoring fine mesh silk to sifters after a critical white flour shortage in 1946. During the emergency period, coarser silk was used for sifting operations



fine adjustment, thereby giving the miller a better means of controlling the character of his grist. An incidental factor which aided this misconception was the advent of the middlings purifier during the so-called "milling revolution" of 1870–80, which together with the new "steel roller mill process" resulted in flour of finer quality without shortening the extraction. In fact, the innovation of these flour milling machinery refinements made possible the production of a very high quality flour while at the same time accomplishing a slightly longer extraction.

"Peeled Wheat" Flour.—An intensive effort to popularize dark bread throughout the U.S. during 1940–41 was based on a new milling process wherein substantially the entire wheat berry, except for the outer portion of the branny layer, was pulverized to a relatively fine-textured whole-wheat flour. The so-called "peeled wheat" process yielded a flour which when freshly milled could be baked into a rather appetizing bread called "staff bread." Although this item was cleverly advertised and skilfully merchandised, the project was abandoned after more than \$1,500,000 had been expended in development and promotional effort. There were still, however, many ardent advocates of whole-wheat flour (and bread), both in Great Britain and in the U.S.

Influences of the War.—Had it not been for governmental edict, it is doubtful that the U.S. milling industry would have found it necessary to alter its milling practices in support of the war effort. This was not the case in Great Britain, where, in order to extend the production of flour to the maximum of milling capacity, the National Wheatmeal program was decreed as a matter of military necessity. Beginning March 23, 1942, in compliance with a ruling of the ministry of food, the milling of flour of less than 85% extraction was terminated. Shortly thereafter Canadian millers agreed to furnish 85% extraction flour for export to Great Britain.

Governmental agencies issuing orders affecting the food supplies of the U.S., including flour, were (1) the Food Distribution administration, set up Dec. 5, 1942, which on April 19, 1943, was merged with (2) the War Food administration, and (3) the War Production board. The latter agency created a major change in milling practice by setting aside the time-honoured 196 lb. bbl. (net wt.) as the standard unit of flour weight. Likewise the ½ bbl. unit, the 98 lb. sack, was discarded in favour of the new 100 lb. unit quantity, effective May 1, 1943.

Another development in packaging, especially with reference to flour for export, was the subjection of flour at the packer to a compressive force of about 2,000 pounds per sq. in., thus substantially decreasing the bulk so that less shipping space would be required for a given weight of flour.

The consequences of war throughout the world had even greater influences on flour milling practices than during the period of actual hostilities. In an effort to avert severe famine conditions in those countries whose normal food supplies were most seriously disrupted, the principal flour producing nations,—Great Britain, Canada and the U.S.—in accord with the U.N.N.R.A. program, began in late 1945 to take steps to increase the world-wide production of flour. Since, during the war years, wheat reserves had been virtually exhausted everywhere, it was deemed necessary to extend the grain supply by every possible means. Longer extraction flours were ordered milled, and beginning with the winter wheat crop of 1945–46, all U.S. mills increased from the customary 72% to a minimum

80% extraction. British millers, already operating at the 85% "wheatmeal" level, were ordered to increase to 90% extraction. A further action of the Famine Emergency commission (U.S.) in co-operation with the U.N.N.R.A., was to place in effect an official order limiting millers to 87.5% (for 1946), of the 1945 production for domestic use.

Progress in Cereal Chemistry.—Cereal chemistry with respect to flour milling made greater progress during the decade 1937–46 than during any other comparable period. Cereal research in grain and flour composition—especially with respect to vitamin and mineral determination—laid the foundations for the program of flour enrichment.

While mill control problems continued to be the principal work of the cereal chemist, several new fields of cereal investigation were revealed in the realm of nutrition research. Co-operation between mill control chemists and cereal research chemists resulted in improved laboratory methods for control of flour quality. According to J. M. Doty, typical problems solved by cereal chemists included perfection of faster methods of vitamin assay, especially thiamin and riboflavin; enrichment (in addition to flours), of corn grits, farina, hominy and various cereal mixtures; vitamin fortification of mill feeds; baking losses of vitamins in bread; and, the effects of direct sunlight on vitamin concentrates.

Vitamins in Mill Products.—Determinations of the distribution (per cent concentration) of the several vitamins in the products of commercial milling, was an important contribution by biochemists to the knowledge of nutrition. The results of this work are consolidated in Table II.

Table II.—Vitamin Distribution in Products of Commercial Milling

	Mill Yield	Thiamin		Riboflavin		Niacin*		
Mill product	%	mg./lb.	% of wht.	mg./lb.	%	mg./lb.	%	
Patent flour	63.0	0.30	8.0	0.18	21.0	12	10.2	
First clear	7.0	1.35	3.9	0.30	2.7	26	3.2	
Second clear	4.5	5.60	10.0	0.85	7.7	83	4.7	
Red dog	4.0	13.5	22.0	1.50	10.8	120	7.6	
Shorts	12.3	7.9	39.6	1.50	33.8	159	17.8	
Bran	9.0	4.2	15.6	1.50	23.0	330	56.3	
Germ	0.2	10.4	0.9	2.70	1.0	68	0.2	
Cleaned wheat	100.0	2.28	100.	.55	100.	70	100.	
*Nicotinic acid (pellagra preventative).								

Statistical and General Data.—The 1937 U.S. Census of Manufacturers listed 2,143 establishments as primarily grain mills, classified as in the flour milling industry, and having an annual production of 5,000 bbl. or more. With an average employment aggregating 24,771 wage carners, these mills had an average employment of but 12 workers each. The importance of small units in this industry may be judged from the fact that more than 88% of all establishments employed fewer than 21 wage earners, and more than 25% of the workers in this industry were employed in such mills. About 44% of the wage earners were in mills employing between 21 and 100 workers, and 28% were in larger establishments.

During the decade, second place in U.S. milling centres passed from Minneapolis to Kansas City, Mo., the latter city having a daily flour capacity of 60,720 cwt., and Minneapolis 60,400 cwt. Buffalo, N.Y., retained leadership with a daily capacity of 100,200 cwt. in 1946. Other important U.S. milling centres: Toledo, Dallas-Fort Worth, Seattle-Tacoma, Chicago, St. Louis, Wichita, Salina, Hutchinson, Atchison, Omaha and Duluth-Superior.

Canadian milling centres rated in capacity as follows, (figures in bbl. per day); Port Colborne, Ont., 12,000; Keewatin, Ont., 10,000; Montreal, Que., 9,000; Winnipeg-St. Boniface, Man., 8,450; Saskatoon, Sask., 8,100; Medicine Hat, Alta., 5,600; Peterboro, Ont., 4,320; Moose Jaw, Sask., 4,100; and Toronto, Ont., 3,775.

(See also Bread and Bakery Products; VITAMINS.)

				No. of	Wheat	Production		Daily Cap'y. Lb. wheat		
				mills	milled in	Flour	Offal	Flour	used per	
				report-	millions	mills. of	mills.	thous, of	sack	
Year				ing(†)	of bushels	sacks (‡)	of lb.	sacks	flour	
1935				1,075	443.1	188.6	7,851	1220	140.2	
1936				1,088	468.0	198.4	8,504	1226	141.6	
1937				1,110	462.3	196.1	8,369	1211	141.2	
1938				1,120	471.2	200.6	8,381	1204	140.5	
1939				1,068	482.3	203.4	8,493	1157	140.2	
1940		·		1,082	468.7	202.0	8,149	1159	139.3	
1941				1,096	482.3	208.0	8,331	1135	139.3	
1942				1.085	495.3	212.9	8,541	1132	139.6	
1943				1,016	531.5	229.8	9,075	1137	138.8	
1944				994	548.2	236.4	9,443	1141	139.2	
1945				1.034	629.8	269.8	11.019	1153	140.1	
1946	1 1	no	.)	1,123	47.5	22.1	641	1163	129.18	

*Data provided by U.S. department of commerce, current statistical service, industry

division, food producer's unit.
†Average. 1100 lb., ea.
§Extraction ordered increased to 80% by War Production board in co-operation with U.N.N.R.A.

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(H. E. BA.)

Flower Shows

See Horticulture.

Fluorspar

World production of fluorspar was greatly increased by the demands of World War II, mostly for the steel industry, but for others as well. Data are shown in Table I, so far as available.

Table L -- World Production of Fluorspar

(Short tons)						
	1937	1939	1941	1943	1945	
Canada	150	240	5,534	11,210	6,921	
France	56,692	ś	46,188	27,388	ŝ	
Germany	159,239	178,534	161,846	210,000	ŝ	
Great Britain	47,220	42,754	46,554	60,744	ş	
Italy	14,754	14,598	23,044	ş	ŝ	
Korea	8,911	24,000	33,000	55,000	š	
Mexico	ş	·	11,597	24,768	55,392	
Newfoundland	9,346	12,376	12,766	72,940	54,940	
South Africa	3,985	11,378	4,945	5,121	4,000	
Spain	4,685	9,268	16,976	39,585	7,119	
United States	181,230	182,771	320,669	406,016	323,961	
Total	572,000	617,000	769,000	990,000	ŝ	

Peak demand in the United States was reached in 1944, when shipments were 413,781 tons; imports 87,200 tons; consumption 410,170 tons. Activity declined in 1945, continuing into 1946, when shipments for the first 8 months were only 158,310 tons and consumption 185,105 tons; even so the operating rate was well above the prewar level. Imports declined more heavily than production, receipts from abroad totalling only 18,463 tons through Aug. 1946.

The over-all effects of war demand are shown most clearly in the consumption data in table II. On a tonnage

Table !. . . . Data on the Fluorspar Industry in the United States

(Snort tons)						
	1937	1939	1941	1943	1945	
Shipments	181,230	182,771	320,669	406,016	323,961	
Imports, total	37,063	16,302	7,524	43,769	103,133	
France	14,158	13,094	·	-		
Germany	14,501	19	_	_		
Mexico	· —	465	4,239	20,515	62,575	
Newfoundland	5,520	2,268	_	7,144	12,566	
Spain	566	168	3,070	15,540	27,322	
Exports	456	2,976	12,184	9,068	1,420	
Available supply	217,837	196,097	316,009	440,717	425,674	
Consumption	194,300	176,800	303,600	388,885	356,090	
lron and steel ,	150,100	127,300	214,700	241,408	204,702	
Acid	24,100	26,300	56,000	113,614	109,315	
Ceramics	17,500	21,400	27,600	22,318	35,569	
Stocks, total	133,639	144,019	165,897	203,182	349,253	
Producers, crude	13,000	15,000	25,000	42,000	27,000	
Finished	30,539	38,619	31,997	19,026	20,249	
Consumers	90,100	90,400	108,900	105,933	103,148	
Government	·	-	´ - -	36,223	198,856	

basis, the increase in consumption was about evenly divided between the iron and steel industry and the production of hydrofluoric acid, but on a relative basis the former increased only about two-thirds, while the latter increased five-fold. Contributing factors to this heavy expansion were the use of hydrofluoric acid in production of high octane aviation gasoline, insecticides (DDT), refrigerating liquid (freon) and artificial cryolite, used in the production of aluminum and magnesium.

In order to expand output to meet demand, extensive use was made of new methods of beneficiating the crude mine output, especially by flotation and heavy-media separation. (G. A. Ro.)

Flying Bombs

See Rockets.

"Flying Tigers"

See CHENNAULT, CLAIRE L.

Flynn, Edward Joseph

Flynn (1892-), U.S. politician who directed the third-term campaign of Pres. Roosevelt in 1940, was born in the Bronx, New York city. He first made the acquaintance of Roosevelt while he was a member of the New York state assembly, to which he was elected in 1918 after graduating from the law school of Fordham university. When he was elected sheriff of Bronx county in 1921, he became political boss of the borough under the tutelage of Tammany Hall. Later he supported James J. Walker for mayor of New York city, and when the latter was elected Flynn was appointed city chamberlain as a reward for his political support. Roosevelt, upon becoming governor in 1929, selected Flynn as his secretary of state, an office he retained under Gov. Herbert H. Lehman. He was chairman of the Democratic National committee from Aug. 1940 to Jan. 1943, when he resigned to accept the nomination for the position of minister plenipotentiary to Australia. Following vigorous opposition from the senate, however, his nomination was withdrawn by Pres. Roose-

In 1945, he was sent by the president on a diplomatic mission first to Moscow and then to Rome, where he conferred with Pope Pius XII.

Folk Dancing

See DANCE.

Folklore, American

The period 1937-46 was a decade of the common man, the Americana decade. The lingo, the attitudes, the yarns and the tunes of ordinary Americans were recognized as something important and valuable and were proudly accepted by the whole nation. American folklore, formerly the preoccupation of the specialist, became a familiar part of broad American cultural activities.

In 1937 Paul Bunyan was just another name: in 1946 most Americans had heard stories of the giant lumberjack and his blue ox that measured 40 axe-handles between the horns. In 1937 a professional ballad singer was a quaint hobo with a guitar: by 1946 this same ballad singer was likely to be in a Hollywood studio. This cultural movement was a culmination of more general trends: a breaking of U.S. cultural dependence on Europe, a heightened appreciation of American cultural heritage, and a deep need for art, literature and music that reflected U.S.

democratic and equalitarian political ideals.

There had been a century of preparation for this development, a period in which all sorts of artists, writers, scholars and educators had gone to the people for the strong and salty stuff of oral literature. The professional folklorists had examined the main streams of American folk culture—frontier balladry, Afro-American song, American heritages from the folklore of France, Spain and other countries. There was a stock of folklore in the 48 states to match that of any other country in the world, both in point of variety and volume. It took a world war and a world struggle against fascism to crystallize and quicken this interest into the broad cultural movement which came to affect the lives of all Americans.

Corralling Folklore.—In the United States the balladhunter, the tale-catcher, the folklorist, was mainly occupied with corralling his folklore. The hardest part of his job had always been to find good informants in the midst of a busy and rapidly changing world and to cajole these normally shy people into giving up their tales and songs and sayings.

Formerly folklorists, in order to take down the yarns and ditties in his notebook, had to insist upon many interruptions and much repetition on the part of the folk artist. Thus both the spontaneity and the total emotional impact of the performance were seriously curtailed. The best recorder available was a cylinder machine which produced a thin and noisy sound, unpleasant even for the collector. With the advent of the modern portable disc recorder, however, the folklorist could bring his folklore "back alive." For the first time, the folklorist's colleagues and audiences could share with him the exquisite pleasures of the oral arts, the oldest and most universal of all arts. The musicologist for the first time could study at his leisure the intricacies of a folk performance. The importance of musical style, voice placement, ornamentation, accompaniment and harmony now became evident and could be evaluated. A ballad was no longer four staves of melody plus a dozen stanzas in a book, but a living piece of art, more than likely a basic melodic theme woven into a number of variations. The folk tale collector now brought back incontrovertible data for the linguist, for the psychologist and for his own understanding of the importance of style in the oral narra-

The sound recording, however, made its most revolutionary impression at the artistic level with learned foundations, government administrators, academicians, creative workers, students and laymen. The voice of the common man, sounding from the loudspeaker, opened new horizons and established immediate bonds of feeling and interest. The folklorist set up his microphone and switched on his amplifier at lumber camps, at mountain square dances, on prison farms, in the quiet of Indian pueblos, at primitive ceremonies in Africa and the West Indies, in the small houses of the people everywhere. The recording needle cut its tireless and accurate spirals of fiddling, Vaudou drumming, passionate folk sermons, the plain and pure singing of the old ladies, the shouts of men at work and the spoken commentary of the folk artists. When played back, these records delighted the performers and stimulated them to recall yet more folklore. When the collector played them for his home audiences his work was regarded with new interest.

So there grew in the Library of Congress, in Columbia university and in other institutions, great libraries of re-

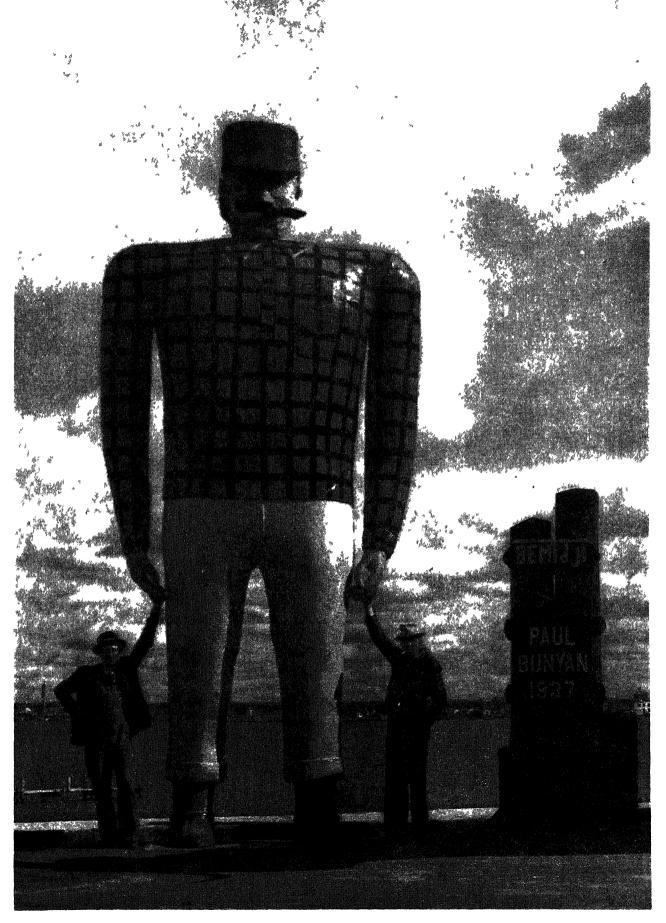
corded folklore still to be thoroughly studied and utilized. Gradually in the lay audience there emerged an appreciation of the real thing in folklore. In 1937, to cite one example, there were approximately 500 records in the Archive of American Folklore of the Library of Congress: in 1946 there were almost 8,000 records with speech and song from most of the regions of North and South America and the West Indies. When it was announced that certain of these records were available to the general public, more than 10,000 letters of inquiry were received within a month. Some understanding of the significance of folklore collecting became general in colleges, governmental institutions and even among music educators. Support for the folklorist, comparatively speaking, was everywhere at hand. Once the sound film came into play in field collecting, the folklorist would truly have his proper share of the world audience.

Meantime the folklorist, whether he used a notebook, a recording machine or a camera, was filling in the map of the folk culture of America.

Map of U.S. Folk Culture.—There are two fairly welldefined regions of Anglo-American folk song; the northern and the southern. The northern region includes the northeast, the middle Atlantic and the Great Lakes states as well as certain parts of the states to the west. The southern region includes the familiar southern states as well as the borderland territory lying along the Ohio river. The southern region, again, was deeply affected by, as it in turn deeply influenced, the Afro-American music that grew there. The great plains and the far west, an area of cowboy song and mining balladry, represented a fusion as well as a thinning out of both northern and southern traditions. From Canada down the Mississippi valley, and throughout the coastal area of Louisiana, there are traces of French folklore. The southwest is Spanish-American. Streaked and spotted across this broadly sketched map, folklorists someday would be able to outline the thousands of enclaves of non-English folklore.

Collections from all parts of the United States also demonstrated that the singing of so-called classical British ballads such as "Barbara Allen" and the "Two Sisters", once thought to be peculiar to the southern highlands, was formerly a pastime common to the frontier. It was indicated, too, that these mediaeval ballads had usually been connected by the folk with their own environment and experience and needs, rather than with some distant and romantic past; that they had been gradually displaced by journalistic and occupational ballads and both of these (in the southern region) by lyric songs.

By examining early American hymn books, George Pulen Jackson traced the relatively unknown white spirituals, from their roots in Europe, through the singing of masters of New England, through the great revival of the 1820s, and down to the 20th century. He showed how every revolution in the Protestant church had been accompanied by a flood of new hymns-religious texts, set to secular tunes. He pointed out that a part of the Negro spiritual tradition derived from Anglo-American folk song. On the other hand, comparative study by Melville J. Herskovits of recorded Negro folk song, as well as of social pattern in Negro communities throughout the new world, offered convincing evidence of a sturdy survival of Africanism in American Negro folk communities. One did not have to be a specialist to recall the many Negro folk songs and tales adopted by the whites. The pattern



of racial bias was inoperative in southern folklore. Negro and white folk artists, living and working side by side on the land, had always competed as performers and traded tales, songs and culture.

The power and the variety of Negro secular songs came to be recognized. The "sinful" singers, those wayward sheep who strayed away from the straight road of the spiritual which the Baptist and Methodist churches held to, had nevertheless created a whole world of song. The reels and buck-and-wing tunes of the Negro country fiddler and banjo-player had provided the impetus for the minstrel show music of the 19th century, as well as many new melodic and rhythmic patterns for all square dance musicians. Around the turn of the 20th century Negro folk musicians, basing their sombre melodies upon the worksong and the field "holler," developed a new dance music for piano and guitar. They called this style "the blues." "The blues" bid fair to become the national U.S. song form. This modern Negro folk music, encountering and fusing with the Creole Negro band music of New Orleans, also provided the spine for American jazz.

America came to know and value this world of Negro secular song, the terrifying rhythmic worksongs from the southern penitentiaries,

Captain called me, Called me a nappy-headed devil, That ain't my name, pardner, No, Lord, that ain't my name

the gay ragtime tunes of the country banjo and guitar player,

All I want in this creation Little bitty wife and a big plantation

the lonesome whoops and hollers of the field hand,

Go down ol' Hannah Don't you rise no more, If you rise in the mornin' Bring judgment on

the bitter, ironic and endless comment of the blues,

I'm goin' where the water tastes like sherry wine I'm goin' where the water tastes like sherry wine 'Cause this Arkansas water tastes like turpentine.

Although the folklorist had long since published many songs in his books and records, it was the awakening interest in hot jazz that turned the country's attention to them. Once music critics and record collectors examined the roots of the hot jazz that they "discovered," they were inevitably led to an appreciation of Negro secular and religious folk song. As tens of thousands of young Americans began to listen to these hot jazz critics and to share their enthusiasm for musicians like Louis Armstrong and Sidney Bechet, they too came to enjoy Negro folk music. The jitterbug decade led to a better understanding not only of Afro-American folksongs, but of the problems of the Negro people.

The American folklorist began to study the folklore of great cities. The WPA Writers' project in New York and Chicago turned up tales of demon brick-setters, superpowered beltline boys and garlands of pungent rhymes from the city playgrounds. It became apparent from studies in New York, Detroit, Chicago and San Francisco, that U.S. metropolises are patchworks of folklore in many languages. Just as in the backwoods, old ballads had been preserved which were no longer current in the parent countries. These old songs represented nostalgia for the homeland, in some sense. In many areas of foreign language culture, however (notably in the Spanish southwest and the Cajun country of Louisiana), there was a vigorous

creative process—recasting traditional lore in the American mould, developing indigenous forms, even spreading certain dances, songs and tales beyond the borders of the non-English-speaking groups. ("Beer Barrel Polka," "Allà en el Rancho Grande," the "Varsovienne," and "Bi Mir Bist Du Schoen" were examples of this trend.)

Finally, an extensive documentation of American folk tales and folk comment was begun. The popularization of the Paul Bunyan folk-literary legend led to the discovery of similar comic tall-tale heroes in many parts of the United States: John Darling in the northeast, Pecos Bill in the southwest, Febold Feboldson in the middlewest were merely a few of these. The American comic hero seemed made to match the size and savagery of the country. In the Smoky mountains Richard Chase unearthed a complete and full-bodied cycle of the delightful Jack Tales of the British Isles. These fairy tales or marchen had been endowed with southern backwoods colour and character.

The folklore section of the WPA Writers' project encouraged the collection of tales and folk commentary in all the states. In their files in the Library of Congress could be found the life stories of several thousand Negro ex-slaves alongside similar accounts from many unknown areas of American life. Volumes such as James R. Aswell's God Bless the Devil, B. A. Botkin's Lay My Burden Down and Stetson Kennedy's Palmetto Country, indicated the richness of this work and of the relatively unexplored field of oral narrative in the United States.

Folklore Gets Around.—A rough count indicated that approximately one-third of the important books in the field of American folklore were published in 1937–46. The yearly folklore bibliography for the hemisphere ran to 200 and more titles by 1946. Articles on folk singers, hot jazz and square dancing began to appear regularly in magazines of large circulation. In 1944 a folklore book—A Treasury of American Folklore, by B. A. Botkin—became a best seller, running into more than 500,000 copies.

The Folkways series, the River series, the Lake series, the Mountain series and the magnificent WPA State Guide-series all included a great quantity of local legends, tales, proverbs and superstitions, bringing this body of oral tradition to a wide reading public. Many books on hot jazz documented what was, in effect, a city folk music. Descriptions of "jam sessions" and autobiographies of the great improvisors of jazz acquainted America with the oral approach to music, that is, homemade music, played by ear and handed down by word of mouth. Meanwhile, through hundreds of pamphlets and folios, some distributed by large music publishers to music lovers and schools, others through hillbilly radio programs to lovers of old-time songs, cowboy songs, mountain carols, square dance ditties and ballads of every description reached a wider and wider reading public.

More important, however, in awakening a general interest in folk song than either the folklorists or their publications were the singers, the balladeers, who came wagging their banjoes and guitars to town. Their recordings, radio programs, concerts, motion picture appearances and their ever-growing circle of fans freshened the roots of oral tradition in every part of the country at the same time as they tended to obliterate local folklore developments and laid the basis for a national songbag, delivered in fairly well stabilized styles.

Around 1925 the commercial recording companies had begun to make their first experiments in recording rural music (Negro, southern white, Mexican and "Cajun"),

after they were persuaded that such records would sell in the home towns of the performers. They soon found, however, that these records had tremendous regional audiences. One of the earliest Negro blues recordings, for instance, sold 1,000,000 copies. The record companies rapidly added new departments to their catalogues. They sent scouts and portable equipment up and down the land, recording thousands of folk and semi-folk tunes from hundreds of oral artists.

At about the same time local radio stations began to permit a few local folk artists (country fiddlers, Negro quartets, ballad singers) to broadcast from their studios. They, too, discovered that a huge audience preferred old-time songs to any other type of music. It was out of these experiments that there developed programs like the "Grand Old Opry" and the "National Barn Dance." These (and numerous similar programs featuring ear musicians and a rural flavour) acquired great national audiences as well as commercial sponsorship, and assured the success of the large stations which initiated them.

Meanwhile the commercial folk artists who made the records and starred on the programs were creating a new kind of American music. Building on a repertory of traditional folk tunes and musical styles they rapidly added new instruments, new harmonic ideas and new "pop" song devices. Some of these singers became so popular that they were elected to political office. Jimmy Davis, the composer of "You Are My Sunshine" (a sentimental hill-billy song—probably better known than the national anthem), became governor of Louisiana. W. Lee O'Daniel ran for governor in Texas and was elected to the rhythm of a hillbilly band; he later was elected to the U.S. senate. Roy Acuff, star of "Grand Old Opry," turned down the governorship of Tennessee because the job didn't pay well enough.

Such musicians and their slicked-up country music were absorbed into the gigantic framework of the American music industry, and shared its boom during World War II. The spirituals, popular in all Negro churches, were largely composed and distributed by a group of accomplished folk artists turned commercial publishers in Chicago. Five thousand or more Negro quartets toured the American Negro world, singing their increasingly "hot" arrangements of the traditional spirituals to great audiences, both urban and rural. Gene Autry's singing westerns made him a national figure, a \$1,000,000 property in the amusement industry. The cowboy on the range was more likely to sing Autry's romantic ballads, composed in Hollywood and interspersed with an Americanized Swiss yodel, than the old cowboy ballads. Hillbilly, or cowboy, bands sprang up in almost every community in the United States, and few of the several hundred American radio stations failed to program some of their music; many carried little else on their schedules.

In this field of commercial folk song, one could find thousands of practising musicians performing pseudo-folk song for scores of lolk audiences: for the Irish of the northeast, the hillbillies everywhere, the Mexicans in the southwest, the "Cajuns" of southwestern Louisiana, the German and middle-European polka and schottische dancers of the midwest, the near-eastern groups of the big cities; in fact, for every cultural minority. This development offered employment and an avenue of self-expression to thousands of oral artists who might otherwise have gone unheard. These artists, under the harsh pressures of an urban world and a ruthless commercialism, wrought rapid and drastic changes in American folklore, cheapening it as well as vastly enriching it. Thus the people, as they

moved to town and as the city culture reached out to them, held to their own music, changing it somewhat to compete with music of the city, but retaining as much as possible of the favoured rural or regional flavour.

Authentic Folklore.—So much for the hillbilly singer and his like. We must now consider the interest of the amusement industry in real and authentic folklore, for it was treated in quite a different way from the commercial folk music. From record jockeys to long-haired concert masters, from small record companies to the moguls of Hollywood, there arose a serious concern about native American culture based on folk tradition. This concern began to mount sharply, and its consequences were legion.

In 1939 the Columbia Broadcasting system began its presentation of folklore and folk performers as such. It was in these programs that Burl Ives, Josh White, Peter Seeger, Earl Robinson, Lead Belly, Woody Guthrie, Aunt Molly Jackson and the Golden Gate Quartet were first given a serious and sympathetic presentation to a national audience. (The other networks also broadcast folk music in a variety of ways.) The subsequent careers of these singers led them into every part of the entertainment world.

Burl Ives grew up in a village in southern Illinois learning folk songs from his family and neighbours. He began to sing at country suppers, revivals and square dances; carried his banjo to college and played with a jazz orchestra. Later he took to the road with his guitar, hoboing through most of the 48 states, picking up songs, singing for his supper, and finally coming to rest in New York city, where he earned his board as a busboy at the International house. After appearances in two Broadway musicals he was put on the staff at Columbia Broadcasting system and began to build his great national following. There were stints in the folk music night clubs (the Vanguard, Cafe Society, the Blue Angel, etc.); albums for Columbia, Asch and Decca, a starring appearance in Elie Siegmeister's folk-musical "Sing Out Sweet Land." Burl's versions of songs like the "Foggy Dew," "The Blue-Tailed Fly," "Old Smoky" and others became nationally popular. Carl Sandburg called him the best American ballad singer. He soon went to Hollywood, but his enthusiasm for and his great understanding of the Anglo-American folk idiom remained unchanged. In Burl Ives, American folk song arrived in the entertainment world.

Josh White left his South Carolina home to lead blind Negro street musicians up and down the land. From his blind masters he learned a subtle and intricate folk guitar style. He added to his inherited repertory of blues and spirituals a great many fine songs from the Anglo-American tradition, as well as freedom songs and songs of protest Irom around the world. Wherever he sang—and he recorded for a number of companies, became a fixture at Cafe Society for a number of years, a favourite singer for the Roosevelts at the White House and a featured star in radio and on Broadway—Josh White linked the troubles of his own people to the world-wide struggle against prejudice.

Earl Robinson came from the state of Washington. His folksy ballads became the mainstay of the liberal and left wing movement. As he came to know the value of American folk songs, he used this material as the basis for large choral works, intoned, spoken and sung. His "Ballad for Americans" was accepted by all Americans of whatever shade of political opinion. His Lincoln cantata, "The Lonesome Train," woven out of folksay and

fiddling and Negro folk sermon, was an important American declaration during the early years of World War II.

John Jacob Niles had been collecting and arranging folk songs for many more years than the singers previously discussed. Although he was a folklorist of great taste and perhaps the most accomplished arranger in the field, his approach was essentially that of an "art" musician. His recordings, his pamphlets of ballads and carols, and his extensive concert tours served to convince many skeptics that U.S. native folk music was worthy of a place in the world of serious music. Because of his work, many beautiful songs, such as "Black Is the Color of My True Love's Hair," "I Wonder As I Wander," the "Cherry Tree Carol," were accepted as art songs in all musical circles.

Woody Guthrie, the dust bowl balladeer from Okema, Oklahoma, was of the breed of folk singer who composed such ballads as "Sam Bass," "Jesse James," and the "Jam on Geary's Rocks." Although Guthrie had some formal education, his inheritance of tolklore, his experiences as a wandering and homeless worker and his passionate concern about the common man dominated his many ballads. In the period of the dust storms he went west with the "Okies," composing a long series of ballads about what he saw and felt. His experiences in the Grand Coulee country in the northwest gave rise to another cycle of ballads about the Columbia river. In his work in the labour movement he created a series of powerful union songs in the lingo of the southwest. In the merchant marine, on the radio and on many recordings, in his hundreds of public appearances, Guthrie remained a sardonic and eloquent "Okie." A whole school of young ballad singers in the east emulated his fine and authentic style.

Peter Seeger, who might be called the king of the city billies, came from a distinguished and accomplished New York state family. He was educated at Harvard and learned from his musicologist father to appreciate world music. His interests developed around the five-string banjo, perhaps the only native North American folk instrument. The only way to study five-string banjo was to look up the folk artists who lived in the hills and hollows and backwoods. Seeger took to the backwoods, bringing back from his travels a fine and remarkable instrumental technique as well as a desire to use folk songs as a weapon for social progress. He organized People's Songs, a sort of national union of progressive ballad singers and composers, whose purpose was to comment on current topics, to satirize politicians, and fight racial prejudice, as well as to bring folk music to a widening audience. Its bulletin and its many crowded recitals brought folk songs and topical progressive ballads to an enthusiastic audience.

Broadway and Hollywood.—As in the other fields already discussed, there had been sporadic use of folk song both in the theatre and in motion pictures before 1937: in Green Pastures, Porgy and Bess and Green Grow the Lilacs, in the plays of Paul Green, Anne Caldwell and others; in Hallelujah, in The Covered Wagon and in the hundreds of westerns, to cite the most obvious examples. In the succeeding decade, however, because of the gathering prestige and popularity of native culture, producers began to take folklore quite seriously. In the Rodgers Hammerstein musicals (Oklahoma! and Carousel), in Bloomer Girl, in Dark of the Moon, in Sing Out Sweet Land, in St. Louis Woman, Call Me Mister, in Finian's Rainbow and Beggar's Holiday, folk ways, both linguistic and musical, contributed largely to the success of these hits. It was no longer a novelty to hear a folk song used as an opening,

as a part of the score, or as an integral part of a Hollywood film. In Burl Ives's *Smoky*, in Earl Robinson's *Callfornia*, in Elia Kazan's *A Tree Grows in Brooklyn*, folk song played an important role.

A folk song concert, whether in Town hall or in any other auditorium in the country, began to draw a large and respectful audience. Since the folklore wealth of the hemisphere corresponded quite well with the history and development of the new world, there was perhaps no limit to the ultimate value of folklore to all entertainment media.

"Serious" Music.-The so-called "serious" music audience not only accepted a number of "authentic" singers discussed above, but also applauded the efforts of a number of native composers who tried to quote folksong or adapt it for their work. Since the days of Anton Dvorak, the cry for American opera and American concert music had been persistent and somewhat annoying. A great number of the best U.S. composers had tried their pens on this seemingly difficult task. With a few exceptions, their output, while well-intentioned, did not have the validity, the originality or the strength of the "commercial" and Broadway music already described. Perhaps it was that too many of the serious composers were educated in Europe and so had lost some of their "feel" for America. A more likely supposition was that the life of a composer in U.S. society so isolated him from the life of the common man, so specialized his taste and his activity, that he could have little emotional understanding of the dynamics of the oral traditions.

This was not to say that interesting and exciting music had not resulted from this attempt of the written tradition to use the stuff of the oral. There was freshness and the substance of the American idiom in compositions such as Aaron Copeland's Billy the Kid and Salon Mexico, Roy Harris' Folk Song Symphony, Virgil Thomson's music for The Plow that Broke the Plans, Henry Cowell's American Suite, Bernard Herman's music for The Devil and Daniel Webster, as well as in many other scores. So far, however, nothing had appeared to match the efforts of Russian, Spanish, German and even Latin-American composers in salty, folk vitality.

A great many energetic figures in the educational world were making just such an attempt. Teachers, textbook writers and educational planners tried to orient more and more courses of study in terms of Americana, in terms of the materials close to the lives of their students. American folklore per se was now taught in many colleges, and there was scarcely an American boy or girl in the American public school system who failed to become acquainted with cowboy ballads, tall tales, legends, spirituals, mountain songs in a music course, in a social science course or in a course in American literature. This trend, which was stimulated by World War II, became much more marked in the postwar period. (A. Lx.)

Societies.—In Jan. 1945, 57 years after its founding, the American Folklore society was admitted by unanimous vote to constituency in the American Council of Learned Societies. On Aug. 22, 1946, the 100th anniversary of the coining of the word folklore by W. J. Thoms, a Folklore section was established in the Library of Congress. With these two steps folklore in the United States went a long way toward achieving the status of an independent discipline, firmly grounded in a synthesis of the humanities and the social sciences.

According to the librarian of congress, the new Folklore section was a recognition of the "importance of this subject to the full understanding of our own civilization as well as the civilizations of other countries," a recognition made necessary by the "development of folklore as a field of scholarly inquiry and the widespread interest in many aspects of the subject." This development owed much to the depression and to World War II, when the exploration and documentation of America were given new impetus and direction by the cultural program of the Work Projects administration and by wartime emphasis on American and inter-American studies.

As part of the revival of national unity and democratic culture, an increased awareness of the interdependence of disciplines helped to break down the separation resulting from the division of labour between ethnologists and folklorists proper, on the one hand, and between literary scholars and musicologists, on the other. In Dec. 1940 the American Folklore society inaugurated an active policy of integrating these studies. Thereafter, to give equal representation to anthropology and the humanities, the society chose its president in alternate years from these fields respectively and held its annual meetings alternately with the Modern Language Association of America and the American Anthropological association instead of regularly with the latter.

Literary folklorists and musicologists likewise sought to pool their resources and efforts. Especially influential in this respect were such organizations as the Committee on Musicology of the American Council of Learned Societies and the Folk Song committee of the Popular Literature section of the Modern Language Association of America. The survey made by George Herzog for the former (Research in Primitive and Folk Music in the United States, April 1936) and the report of the latter (June 1937) heralded a new era in folk song research. The end of the old era was marked by the passing-between 1937 and 1946 -of six folk song scholars: Phillips Barry (1880-1937), Frank C. Brown (1870-1943), John Harrington Cox (1863-1945), Mellinger E. Henry (1873-1946), George Lyman Kittredge (1860-1941) and Reed Smith (1881-1943). The earlier phase established first the study of ballad poetry and then the "rights of ballad music" and native American folk song of all types. In the later phase, a combination of many approaches-ethnological, sociological and psychological, as well as literary, linguistic and musicologicalresulted in more and better recording, transcription, classification, melodic indexing, checklists, comparative studies and life histories of tolk songs.

The integrating process in American folklore fostered and was in turn fostered by the growth of archives and societies. The increased availability of modern sound recording posed the problem of adequate preservation and accessibility of collections. At the same time the increased demand for source material from scholars, educators, broadcasters, composers, writers, etc., enforced the need of shortening the distance between collection and utilization.

Although the United States had no central depository and clearinghouse comparable to the great European archives, the nearest equivalent was the Library of Congress, containing the Archive of American Folk Song (1928, later incorporated in the new Folklore section), the Recording laboratory (1940) and the folklore collection of the Federal Writers' project (1941). Under the successive direction of Robert W. Gordon, John A. Lomax, Alan Lomax, B. A. Botkin and Duncan B. M. Emrich, and largely through the collecting activities of the Lomaxes, the archive acquired 8,500 instantaneous records (including duplicates of other collections), representing nearly all states and parts of Canada, the West Indies, Mexico and Central and South America. This collection was rivalled only by the

Archive of Primitive Music in the department of anthropology of Columbia university, under the direction of George Herzog, which in 1940 comprised about one-half of the total number of recordings of Indian music in the country, in addition to considerable folk music of foreign-language groups.

The increasing participation of the universities in folklore and folk song collection, study and publication indicated that the oral tradition had at last become respectable. Most institutions with considerable departments of anthropology or music or with active folklorists on the faculty possessed collections or were engaged in recording. Among the older collections were the Phillips Barry and Folk-Song Society of the Northeast collection at Harvard university; the collection of speech records at Columbia university; the Frank C. Brown collection at Duke university; the Archive of the Virginia Folklore Society, under Arthur Kyle Davis, Jr., at the University of Virginia; the Spanish-American collection of Arthur L. Campa at the University of New Mexico; and the Negro collections at Fisk and Northwestern universities. Later were the Archive of Vermont Folk Songs under Helen Hartness Flanders at Middlebury college, the Folklore Archives of the New York State Teachers college at Albany under Louis C. Jones and the Wayne University Folklore project under Thelma G.

The growth of folklore societies was also responsible for the increased number of collectors and collections. After 1888, when the American Folklore society was founded. some forty metropolitan, state and regional branches and societies in the United States had been established. Seven of these were organized during 1937-46: California (1941), Hoosier (1937), Michigan (1939), New Jersey (1945), New York (1944) South Carolina Negro Folklore guild (1944), and Wisconsin (1938); while an eighth, New Mexico, originally founded in 1931, was reorganized in 1945. Of the older societies the following were still active in 1946. French (1936), Kentucky (1912), North Carolina (1913), Pennsylvania (1927), Pennsylvania German (1935), Southeastern (1934), Tennessee (1934), Texas (1909), Virginia (1913). Five state societies-California, Hoosier, Michigan, New Mexico and North Carolina-became affiliated with the American Folklore society. In 1940 four state societies -California, Hoosier, Michigan and North Carolina-were affiliated with the American Folklore society. In order to effect closer co-operation with local groups, the society enlarged its council, obtaining better regional representation; appointed committees on research, utilization, and handbook; instituted a system of junior memberships for students and introduced, in the quarterly Journal of American Folklore, a regular department of folklore news and an annual section on work in progress.

These co-operative measures were directed partly toward amateur folklorists and were a tacit admission that the latter could no longer be ignored by professional folklorists any more than folklore could be ignored by scholars in other fields. With the growth of interest in local history and native culture, increasing numbers of persons were attracted to folklore as a leisure time activity or an allied field. They included laymen inspired by patriotic, antiquarian, or aesthetic motives and workers in education, recreation, social service and the arts. The problem of utilizing and guiding the uninitiated and volunteer worker as well as the co-worker from related fields was a problem in the conservation of human resources akin to that of conserving materials.

To meet the growing demand for instruction from both within and outside the folklore profession, an increasing number and variety of courses were introduced in the colleges and universities. According to a survey made in 1939 by Ralph S. Boggs and David P. Bennett, 60 courses were taught in 25 institutions, in departments of anthropology, English, German, romance languages, music and sociology. In spite of the growing popularity of courses in folklore and folk music appreciation, training courses and opportunities for specialization were limited by the scarcity of jobs for folklorists, which in turn reflected the low status of folklore teaching and the lack of systematic work. In 1939 Ralph S. Boggs succeeded in establishing at the University of North Carolina the first graduate curriculum in folklore in the country. At Indiana university, Stith Thompson organized the Summer Institute of Folklore (later the Folklore Institute of America), held in 1942 and 1946. Teachers and students, professionals and amateurs, were also brought together for discussion, consultation and study at conferences like the White Top (Virginia) Folk conference and the Western Folklore conference at Denver university (the latter held annually under the direction of Levette J. Davidson).

Festivals.—Folk, folklorists, and the growing folklore audience met at folk festivals. As a medium of diffusion, the festival helped to keep folk singing and dancing alive. As a form of utilization, it served the purposes of recreation, education, or entertainment. As a cultural expression, it enabled regional and ethnic groups to preserve their own identity and to understand one another better. Yet, because of the dangers of antiquarianism and exploitation, the festival, like the amateur collector, required proper guidance and control.

In the hands of different groups, with divergent points of view, the folk festival served a variety of purposes, with varying degrees of authenticity and responsiveness to changing conditions. At the old fiddlers' contest at Galax, Va., and the Asheville (N.C.) Mountain Dance and Folk festival (directed by Bascom Lamar Lunsford) the emphasis was placed on competitive and entertainment features. At the American Folk Song festival of the American Folk Song society at Ashland, Ky. (founded by Jean Thomas in 1931) and the White Top Folk festival (directed by John Powell and Annabel Morris Buchanan), the traditional forms of the English ballad, folk dance and singing game were preserved. At the Mountain Folk festival at Berea college, Ky., the Highlander Folk School festivals at Monteagle, Tenn., and the Annual Negro Folk festival at Fort Valley State Teachers college, Ga., old and new forms were integrated with a program of rural and social education, recreation and people's culture. The Folk Festival council in New York city (1931) and the Festival of Nations in St. Paul (held under the direction of Alice L. Sickels from 1932 to 1942) utilized the folk festival in intercultural education, as a common ground of cultural diversity. At Camp Woodland, Phoenicia, N.Y., the Folk Festival of the Catskills (founded by Norman Studer in 1940) was adapted to the uses of progressive education, stressing the place of folklore in a democracy and in rural urban exchange. In conjunction with the Pennsylvania Folk festival at Bucknell university, Lewisburg, Penn. (directed by George Korson from 1936 to 1938) and the National Folk festival (founded in 1933 by Sarah Gertrude Knott), local festivals were organized on a state-wide and nation-wide basis.

In New Mexico alone, according to Miss Knott, in con-

nection with the Coronado Cuarto centennial in 1940, 200 folk festivals were held in Spanish-American and Anglo-American communities and schools.

Hand in hand with the spread of festivals went the revival of folk dance, folk song and the folk arts on both a leisure-time and a vocational basis. With the setting up of the relief agencies, large-scale research and operating programs supplemented the work of public and private social agencies in adapting folk culture to community needs and resources and the skills of the unemployed. From 1935 to 1939 the Folklore Studies of the Federal Writers' project, under the successive direction of John A. Lomax and B. A. Botkin, employed untrained and semitrained personnel in gathering folklore on a national scale for use in the state guidebooks and special folklore books and pamphlets. In addition to actual publication, this program developed a nation-wide folklore intelligence service for locating informants and sources, produced thousands of pages of unpublished material later filed in the Library of Congress and specially designed state depositories, and had a general quickening and humanizing effect on the literature of folklore.

In Dec. 1938, co-operative folklore research, along interdepartmental, interdisciplinary and intercultural lines, was stimulated by the formation of the Joint Committee on Folk Arts, of the Work Projects administration, consisting of specialists from the Federal Writers', Music and Theatre projects, the Historical Records survey, the Index of American Design, the Recreation and Education divisions and the Technical Services laboratory. In consultation and cooperation with old-line federal agencies (such as the Library of Congress, the department of the interior and the department of agriculture) and non-federal agencies (such as the American Council of Learned Societies, the American Folklore society and various universities and committees), the Joint committee attempted to co-ordinate and implement the folklore program of the Work Projects administration.

Conferences and Publication.-Beginning in 1939 Washington folklorists held a number of planning and development conferences which influenced the course of tolklore organization and research for some time to come. In Oct. 1939 the state department Conference on Inter-American Relations in the Field of Music laid the foundation for a number of Inter-American projects, including the Inter-American Music Center in the Pan American union (under the direction of Charles Seeger) and the Library of Congress albums of Folk Music of the United States. In Dec. 1940 at the 54th annual meeting of the American Historical association in Washington, D.C., a discussion session was built around the use of folklore (Federal Writers' project), folk music (Federal Music project), dialect (Linguistic Atlas of the United States and Canada) and documentary photographs (Farm Security administration) as sources of cultural history. In April 1942 the American Council of Learned Societies sponsored a Washington Conference on the Character and State of Studies in Folklore to consider the various approaches (comparative, ethnological, functional and creative) and technical problems (field and laboratory techniques, archives and classification, bibliography, publication and progress and directions in teaching, study and utilization).

Similar conferences were held in other parts of the country. From 1942 to 1944, the Rockefeller foundation sponsored a series of conferences on the life and culture of the various regions, which resulted in several folklore projects, such as the Utah Humanities Research foundation under Hector Lee. In July 1944 the Kansas State Teachers col-

lege at Emporia sponsored the first of a series of annual folklore conferences. In Sept. 1944 the Folk Arts conference at the University of Minnesota brought together a group of inter-cultural leaders and folklore authorities to organize the Folk Arts Foundation of America and plan a postwar project for a Minnesota folk arts centre, museum and international park.

The attendant increase in the volume of folklore publication was indicated by the steady growth of the annual bibliography compiled by Ralph S. Boggs in the Southern Folklore Quarterly in 1938 and thereafter. From the range of subject headings and titles it was evident that folklore in America had enlarged its scope to include the study of the folk as well as the lore, handskills as well as mindskills and folklore in the making as well as survivals, in written as well as unwritten tradition. With the lessening of the distance between the various disciplines concerned with its study, larger and larger areas of culture and history were brought within the boundaries of folklore. Keeping pace with the growth of comparative and acculturation studies, increasing attention was paid to the influence of print on folk song and folk tale, to the aesthetic aspects of mythology and to folk history. At the same time folklore exerted a leavening influence on literature, as witnessed by the increasing use of folklore in novels, plays, poems, reportage and documentary writing.

As the rediscovery of folklore went hand in hand with the rediscovery of America, folklore emerged as an art and a science that gave promise of bridging the gap not only between the humanities and the social sciences but also between one cultural group or level and another. (See also Dance; Music.)

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Food, Drug and Cosmetic Laws

See Advertising; Canning Industry; Drug Administration, U.S.

Food and Agriculture Organization

See AGRICULTURE; UNITED NATIONS.

Food and Drug Administration

See Drug Administration, U.S.; Federal Security Agency.

Food Prices

See AGRICULTURE; PRICES.

Food Research

See BIOCHEMISTRY; CHEMURGY; DIETETICS; INDUSTRIAL RESEARCH; VITAMINS.

Food Supply and World War II

World War II and its aftermath created a degree of food-consciousness never before attained in the history of

modern civilization. Next to military affairs, the universal concern over food furnished the main topic of conversation, the main problems for legislators and public officials and the main basis for international collaboration.¹

Most governments were genuinely concerned over the measures that had to be taken to meet growing demands. This was reflected in the seriousness with which most governments participated in international deliberations on food and agricultural policy, and led to the opinion that one of the most significant developments of World War II was the greater realization of the essential function that food must play in society and of the relation of adequate diets to healthful living, greater vigour and emotional stability.

Axis War Preparations.—The extent to which the war preparations of the axis powers included food supply was noteworthy. Germany and, to a lesser degree, Japan and Italy, were highly successful in drawing the adjoining producing areas into the orbit of their economic influence and in utilizing the productive capacity of whole regions in accordance with their war aims.

Germany.—By following a deliberate policy of stimulating domestic agricultural production and discouraging consumption of high-grade foods, Germany succeeded in reducing considerably its imports of food and feed and in raising its level of agricultural self-sufficiency from 73% in 1929 to 83% by 1937. It reached an especially high selfsufficiency in feed. Net imports of starchy feedstuffs were reduced from 1,200,000 tons in 1932 to less than 200,000 tons in 1937. Imports of oilcake decreased from 2,300,000 to 1,200,000 tons, and oilseeds decreased from 2,400,000 to 1,800,000 tons during this period. Yet Germany's fat supply remained largely dependent upon imports. Imports of animal fats, plus production from imported feedstuffs, represented 55% of its fat consumption and thus became the main concern of Germany's food supply policy in the period of immediate preparation for World War II. Large quantities of grains, fats and feedstuffs for reserve purposes were purchased abroad, and a variety of measures designed to build up southeastern Europe as a source of steady supply were applied.

The goal of German trade policy, under the so-called "Schacht plan," was to integrate the economy of eastern and southeastern Europe into the German "system" with these countries replacing Germany's overseas sources as suppliers of raw materials and foodstuffs. The plan succeeded in tying these countries to the German economy, partly through exchange and clearing arrangements, partly by furnishing a guaranteed market for the agricultural products and industrial raw materials of the southeast, partly by paying high prices for these products and partly by forcing these countries to rely more and more upon Germany for their industrial imports. This development was illustrated by the fact that Germany's share in the trade of this area rose from one-sixth in the 1920s to about one-third in the latter 1930s.

Germany was the only European country which, during the prewar years, tried to achieve significant changes in its pattern of food consumption. The nazi regime proclaiming the *leitmotiv* of guns instead of butter, tried to divert consumption away from foods in which the degree of self-sufficiency was particularly low. This was especially true for fats, eggs and cheese. Consumption of fish and sugar was increased with the help of subsidies, regulated prices and rationing.

¹The authors acknowledge the valuable assistance received from the economics and statistics staff of the United Nations Food and Agriculture organization in analyzing the food position of various regions of the world.

Governmental regimentation of domestic agriculture was highly organized. Among the first measures adopted by the National Socialist dictatorship was a sharp reduction in payments for imports and corresponding financial aids to domestic production. Efforts to stimulate production were facilitated because full employment, as a consequence of the armament program, created a large demand for foodstuffs and rendered price increases possible. The index of prices of agricultural products was 23% higher in 1937 than in 1932.

To offset the decline in farm labour, improvements were made in farm equipment, and expenditures for machinery were increased between 1932 and 1938 by more than 160%. Various measures were devised to increase self-sufficiency in feedstuffs. Butter prices were fixed at a high level but so were prices of imported concentrates; thus, farmers producing their own feed had an advantage. Increases in crop yields were attained by applying much more fertilizer and by improved agricultural techniques. Because of the great value of the potato as an animal feed, its production was improved with the help of labour-saving machinery and fertilizer. The area under sugar beets was extended 50% and large quantities of beets were fed to livestock. Production of green feed crops was increased, and the silo capacity was extended from 650,000 to 7,400,-000 cu.m. As a result of these measures, the total production was expanded by more than 17% in 10 years without increasing the agricultural area and in face of a marked decline in feed imports.

Control of marketing and production had been achieved by setting up a special organization called Reich Food estate (Reichsnaehrstand). National and regional production goals were set up by this organization and, although individual farmers had a considerable leeway in their production program, the establishment of detailed farm records gave the regional representative of the Reich Food estate the opportunity to control and supervise each farm.

Price manipulation was, however, the most important device for the direction of agricultural production. The Reich Food estate could regulate the market and its prices by working through market associations, which were compulsory cartels set up for one or several specific commodities, and included producers, traders and processors. Prices and dealers' margins were fixed for all stages of the trade from the farm to the retailer. Setting higher or lower prices made it possible to increase production or marketing of certain products at the expense of others. The marketing associations could fulfil their functions because special national offices (Reichstellen) controlled all foreign trade and fixed import and export prices.

Italy.—The fascist government in Italy was interested in having as much food as possible domestically produced for financial as well as for political reasons. It was successful in raising prewar self-sufficiency to about 93%. State intervention included tariffs, licences, subsidies of staple food production, marketing control, price fixing and compulsory pools. Yet the degree of over-all control achieved was far short of that attained in Germany.

Land reclamation and improvement programs carried out by quasi-public agencies played an important role in Italy's agricultural policy. Production was aimed mainly toward an increased volume of wheat. High yields were awarded premiums while tariffs and guaranteed prices encouraged better farming practices. Special regulations provided for crop rotations and varieties suited to environmental conditions. In 1936 the compulsory consignment of

all wheat to collective pools (ammassi) had been imposed, and after 1939 the production of only one type of wheat flour was permitted. Agreements between producers and processors made possible the control of sugar beets, flax and hemp without establishing a special government agency. However, a special rice office was established which sold rice seed to farmers and bought the entire crop. In 1938 provincial corporations composed of all landowners and tenants were set up in order to control and develop the work of the farmers in accordance with the instructions of the ministry of agriculture.

Japan.—Like Germany, Japan took measures to assure adequate food supplies for World War II. While its schemes were less ambitious and less ably administered, Japan did manage to develop a high measure of economic control over neighbouring areas and thereby was able to attain a high degree of regional self-sufficiency. This scheme, known as "Co-Prosperity sphere," linked Japanese industry with Chinese, Manchurian and Indo-Chinese food and raw materials. Under this plan Japan depended on imports from adjacent areas for 15% to 20% of its food. One-sixth of its rice, the main food, came mostly from Korea and Formosa. About 70% of its soybean requirements were imported from Manchuria, more than three-fourths of the sugar consumed was supplied by Formosa, and the mandated territories in the Pacific provided the bulk of the copra and coconuts.

The arable lands in Japan proper were intensively cultivated, and marketing of agricultural products was efficiently organized. Domestic production and imports of food grains were supplemented by a huge fish catch which supplied the average Japanese with 95 lb. of fish per year. Food of vegetable origin, rather than animal, predominated in the diet.

A substantial reserve of rice was accumulated, partly as an insurance against crop failures, partly as a war reserve and partly in support of the price structure. In 1939 a rice distribution control law was passed which established a semi-official body called the Japan Rice Co., Ltd., for the purpose of monopolizing the rice markets for Japan.

Wartime Developments

During the period of axis domination, the food supplies of continental Europe showed a steady downward trend. Individual countries, however, were affected to varying degrees at different times. The quality of the diet deteriorated much faster and to a greater degree than the quantities of food consumed. The conquered areas frequently suffered severely while food supplies were requisitioned for German and Italian civilian and military purposes.

"Fat Gap."—In spite of its concerted efforts, Germany was unable to close the so-called "fat gap." This became the main problem of its wartime food production policy. Although it had extended the area under rapeseed from 6,000 ha. (14,820 ac.) in 1932 to 60,000 ha. (14,8200 ac.) in 1938, its total production of about 40,000 tons of oil covered less than 3% of its fat consumption, not including oils for industrial purposes. During World War II the acreage devoted to oil-producing plants was extended fivefold over 1938. The German climate, however, is not well suited for oilseed production.

Hunger and insecurity were familiar to millions of Chinese during World War II; cities were rapidly reduced to famine areas whenever marginal food supplies were cut off or destroyed by drought, hostilities or military requisitioning. Homeless civilians shown in the picture were living from hand to mouth after being bombed out of their homes in Changteh



Oil-producing crops were expanded elsewhere under German control. In German-occupied Belgium, for instance, farmers with more than 5 ha. (12 ac.) of land in 1943 were required to plant at least 6% of the cultivated area with oilseeds. In France the area devoted to oilseeds increased from a prewar average of 13,000 ha. (32,110 ac.) to 284,000 ha. (701,480 ac.) in 1944. Still more important was the expansion of oilseed production in southeastern Europe.

Production Changes.—Total agricultural production declined under the impact of World War II. Although some grassland, especially in Norway and the Netherlands, was ploughed up, total arable acreage was reduced. In France the seeded area was reduced considerably during the first year of World War II, and in other regions labour shortages and military operations had the same effect. The decreasing supply of fertilizers, insecticides, labour and equipment was felt more and more as the war progressed. Moreover, weather conditions were unfavourable during three successive winters, 1939–42. Under these conditions the prevalent policy was to shift further toward production for direct human consumption in order to save the large amount of food energy lost in animal feeding.

Production of potatoes and sugar beets producing the highest caloric value per hectare was extended. Sugar beet acreage of continental Europe in 1943 was more than 10% above prewar levels. Hungary, Switzerland, Turkey and Rumania cultivated from 30% to 40% more acres than in 1937-41. However, in the latter stages of World War II, farmers used more sugar beets for feed, thereby reducing the production of refined sugar.

Drastic measures were taken to reduce numbers of hogs and poultry so that the largest possible amount of grain and potatoes could be used directly as food. At the end of the war, hog numbers in Europe had decreased 40–50%. However, efforts were made to conserve milk cows, and by 1944 total cattle herds had decreased less than 10%, but the lack of concentrates affected the milk yield and the output of milk and milk products decreased by about 30%.

The utilization of the greater part of the crops for direct human consumption and the absence of all overseas feed imports resulted in a marked decline in meat, lard and eggs. Measured in calories, the meat and slaughter fat output decreased by 30% and the output of eggs by more than 50%. But while there was a marked decline in the volume of foods produced, the caloric value of the food supply consumed directly fell but little in some of the western European countries.

Trade and Requisitioning.—During the early years of World War II, Germany imported grain from Russia and oils from the far east across the Trans-Siberian railway. France received food and phosphate rock fertilizers from North Africa. The entry of soviet Russia into the war and the occupation of North Africa by the Allies in Nov. 1942 stopped these shipments. Although only a small percentage of Europe's caloric intake came from overseas, it meant an important reduction in Europe's fat and feedstuff supply.

Trade within Europe was almost entirely directed by the axis powers in the interest of their war strategy. Exports from various countries to Germany and Italy were either enforced by political or military pressure or were directly requisitioned by the occupying armies. Bread grain was shipped to Germany and Italy from occupied U.S.S.R., Poland and France; livestock products from Denmark, Poland and France; vegetables from the Netherlands; and oilseeds, cereals and other foodstuffs from Rumania, Hungary, Bul-

garia and the Danube plain of Yugoslavia. In a commodity exchange between Germany and Italy fruits went to Germany.

At the same time, some of the satellite or occupied countries had to be provided with foodstuffs they were lacking. Finland, for example, received bread grain, sugar and fat; Belgium received bread grain and Norway required sugar and wheat. Austria and the Sudetenland likewise were deficit areas, and France received small quantities of seed potatoes and sugar.

Administrative Measures.—Wartime food control had to deal with more complicated and much more vital problems than any prewar control. Many new devices were found. Still, direct control of the production pattern of the individual farms was practised to only a limited extent outside of Germany. Even there, where regional and local plantings were directed by the government, the farmer was left a certain leeway. In some countries the area for some special crops was fixed either as a percentage of a certain base period or as a percentage of the total crop land. Maximum figures for livestock were usually fixed in relation to a reference period.

In the main there were three devices used for assuring the production and delivery of agricultural products: (1) price policy and monetary premiums, (2) direct enforcement of production and delivery quotas and (3) economic incentives in kind. Nearly everywhere prices for vegetable products were fixed relatively higher than were prices for livestock products, as an inducement to sell crops for direct human consumption; premiums were paid if delivery quotas were exceeded. These monetary inducements became less effective as confidence in the currency declined. This caused the control authorities to use consumers goods as incentive payments for greater production efforts. Particularly, foods processed from agricultural products, as, for instance, oil and sugar, were given in return for certain quantities of oilseed and sugar beets delivered. Frequently various other kinds of consumption goods were given as awards or in exchange for agricultural products, in some cases approaching barter trade.

The direct imposition of production and delivery quotas, varying in scope and method of assessment according to the specific supply situation, was widely used. National, regional and local agencies were formed to enforce them. They worked well in Germany in co-operation with the terror apparatus of the nazi party but were much less successful in countries occupied by or allied with Germany. Flourishing black markets provided strong incentives for violation of governmental regulations.

Trade also was controlled everywhere by special agencies set up for this purpose. Laws prohibiting all sales except to licensed dealers or agencies were promulgated in most European countries but lost much of their meaning where control measures were not very effective.

Beside the control of production, collection and distribution of food, a number of other devices became necessary to assure a minimum food supply. To reduce the claim of food distribution on transport facilities, special regulations were tried in Germany to eliminate the overlapping of transport. The so-called millers' plan, for example, bound certain grain producers and millers together and reduced the volume of grain products transported beyond 15 mi. The brewing industry was likewise forced to exchange customers and was not permitted to deliver beyond a certain distance. Food deficiencies of some districts resulting from this scheme were corrected through special orders for extending production of these products in the particular area.

Consumption.—The quality of the diet in continental Europe deteriorated rapidly as World War II progressed. In western and central Europe, potato consumption increased because of the reduction in hog numbers and the increased quantity of potatoes available for human consumption. Bread consumption fell far less than grain production, since feeding of bread grain was forbidden in many countries, and coarse grains and potatoes were added to the bread. The extraction rate of flour was increased to 95% in many countries. While carbohydrate foods became more important in the diet, consumption of fats and animal proteins declined everywhere. This decline was especially marked in Norway, the Netherlands, Belgium and France.

By 1943 the average caloric intake in Germany, Austria and Italy had decreased only 5% or 6% since ample supplies from other European countries were requisitioned. In the agricultural surplus countries, including Denmark, the average caloric intake had been reduced by 10%, while in countries like France, Norway, Finland and the Netherlands, the reduction amounted to 20% or 30% and in Belgium and Greece to 35% or 40%.

These reductions in food supplies affected various groups of people differently. The axis armies had first priority. The farm population, having direct access to the food, ate what they needed before they delivered their products to the cities. As manufactured goods became scarcer, farmers became more reluctant to surrender their products. The urban population, however, with the exception of the very rich, had to live on a rapidly deteriorating diet.

In 1943-44 the food supply of the city population became more critical. Domestic output was falling, peasants were unwilling to sell through official channels, transportation difficulties were aggravated by bombings and the regional authorities resisted orders to share their food supplies with deficit areas. In many places the city population had to live on a starvation level; in some regions, especially where war and internal strife had disrupted production, peasants fared no better. The normal food deficit regions of Dalmatia, Lika, Montenegro and some

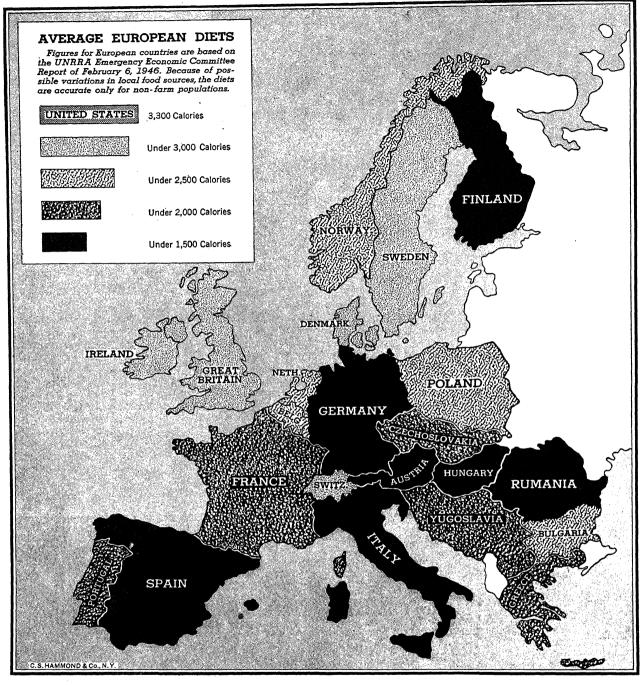
other areas of Yugoslavia, being cut off from the rest of the country by partition and by guerilla activity, were subject to starvation. As a matter of fact the farm population there was worse off than the city population since it was never self-sufficient, and any food imports coming into the region were distributed only in the towns.

Food rationing was introduced everywhere in Europe, at least for the city population, as a means of assuring a more even distribution. In most countries the population was divided into several consumer groups as heavy workers, workers, children of various age groups and so-called normal consumers. As cuts in the rations occurred, the normal consumer category was made to bear the brunt of the burden. In countries like Poland, where German occupation authorities were merely interested in the exploitation of manpower, normal consumer rations went down to 1,100 calories. Greece, which had few resources that could be exploited, was subjected to starvation. There the shortage of man and draft power combined with a severe drought in 1941, lack of seed and other factors had greatly reduced already meagre domestic production. The annexation by Bulgaria of some of Greece's best agricultural land added to the disruption of the food supply. As early as 1942 real famine conditions prevailed in Athens, Piraeus and the Aegean Islands. Hundreds died of starvation every week. Eventually, the belligerents agreed on a scheme which permitted sufficient relief shipments to enter Greece to relieve the catastrophic situation.

As food became scarcer, more people attempted to supplement their rations, causing prices for those extra supplies to climb higher. Everywhere an illegal trade developed. The effectiveness of the rationing system on the one hand and the extension of the black market on the other hand varied from country to country. The allembracing control system of production and distribution

U.S. Secretary of Agriculture Clinton P. Anderson (left), Sir John Boyd Orr, director of the United Nations Food and Agriculture organization and U.N.R.R.A. Director F. H. La Guardia, during 1946 sessions of the F.A.O. at Washington, D.C.





in Germany facilitated the working of the rationing scheme. The severity of the penalties helped also to keep black market offenses down, although they did not prevent them. In France the black market played a much larger role. The attractiveness of high prices and the desire to keep supplies out of German hands worked together to keep rations adjusted not to available supplies but to what little could be collected from the peasants. The weakness of the Vichy government and its unpopularity made its control measures rather ineffective. Thus, at the end of World War II, city food rations in France were down to around 1,400 calories, among the lowest in western Europe.

Industrial workers were not only given preference in the rationed distribution of food but also benefited from special forms of feeding. The erection of armament factories at long distances from living quarters, the long working hours and the conscription of housewives led to increased feeding in factory canteens and other communal feeding places, especially in Germany. When the destructive air raids against German cities became intensive, civilian feeding from transportable kitchens was introduced. These took the form of motor-mounted kitchens, inland waterway vessels and especially equipped trains.

The Soviet Union.—At the outbreak of World War II the U.S.S.R. was making substantial progress in its planned

food production program. Greatest gains had been made in the production of grains and other crops; meats, fats and milk were still much less than the requirements for a balanced diet. Still the U.S.S.R. was following a policy of self-sufficiency that included a small volume of exports. Prewar food supplies were estimated to yield about 2,800 calories per caput daily, of which more than 65% was derived from cereals and less than 20% from animal products.

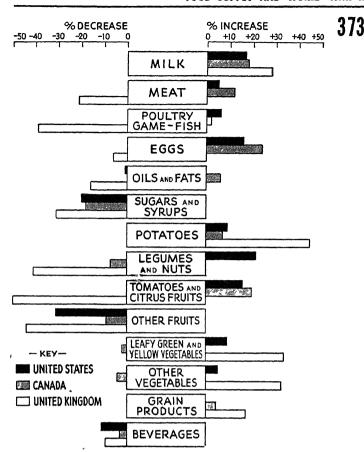
The food situation in soviet Russia deteriorated only slightly until the summer of 1942, when axis troops penetrated deep into its territory. Up to this time losses of territory had resulted in a considerable deficit of sugar and, to a lesser degree, of pork and lard, but bread grain supplies were not in serious danger. By Nov. 1942, however, the Germans were in control of new areas in the Don valley and most of northern Caucasia which, together with the Ukraine, supplied most of the requirements of the northern industrial centres and Transcaucasia. However, at the time of maximum German penetration in 1942 the food position in the unconquered soviet areas, though extremely difficult, was not yet critical. The 1942 crops in areas still under soviet control, plus state reserves, were sufficient to provide up to 85-90% of the bread grain and total feed grain supplies normally needed by the popula-

When the soviet counteroffensive swept into the western territories, the general food situation rapidly deteriorated and became critical. Between Nov. 1942 and June 1943 the soviet armies had reconquered a devastated area, containing close to 10,000,000 persons, where food supplies were critically short. By the spring of 1944 the soviet union had regained control of all the major agricultural regions whose surpluses in normal times had played a significant part in meeting the needs of the food deficit areas. However, this development proved a liability rather than an asset, and the rapid reconquest of formerly invaded areas only served to accentuate the government's food supply problem. These areas, notably the Ukraine and Byelorussia, had suffered some of the worst wartime devastations in any European theatre of war and were retaken only after the crops were harvested, thus giving the Germans time to increase the scale of devastation and to destroy what crops they could not remove during their retreat.

The loss of agricultural resources was the critical factor in the latter stages of World War II. The Russian "bread basket" was greatly affected by having about 40% of its prewar crop area overrun by the Germans. Further, this region produced about 80% of the sugar beets, 60% of the hogs and 40% of the cattle. As crop yields per acre in these regions were relatively high and contained a large share of high food value crops, such as sugar beet and oil-seeds, the loss in production was even greater than the acreage figures would suggest.

The losses in crop areas were paralleled by large-scale losses of livestock plundered, killed or taken away by the Germans. Livestock losses were reported to be 7,000,000 horses out of a total of 12,000,000 in the invaded territory; 17,000,000 cattle out of a total of 34,000,000; 20,000,000 hogs, 27,000,000 sheep and goats and 110,000,000 head of poultry.

No less serious was the loss of agricultural equipment, machinery and food-processing plants. According to soviet sources the machinery and equipment destroyed included 137,000 tractors, 49,000 combines and about 4,000,000 plows, harrows and other tillage implements. Losses of this magnitude were a real handicap to reconstruction of agriculture in eastern Europe.



Supply and civilian consumption of foodstuffs in 1943, as compared with prewar levels, for the U.S., Canada and the United Kingdom; adapted from charts prepared for the British Chiefs of Staff committee during World War II

United Kingdom.—The maintenance of a satisfactory national diet was one of the urgent problems that had to be faced by the United Kingdom. The fact that this was accomplished was a tribute to the ingenuity of the government, to the unselfishness of consumers and to the support of the other members of the British empire and its allies. Prior to World War II the United Kingdom imported two-thirds of the calories consumed and more than half the total proteins, more than half the meat, nearly all the fats, four-fifths of the sugar and about nine-tenths of the cereals and flour, as well as large quantities of feeds which were used in domestic production of meat, poultry, eggs and milk. These food and feed imports averaged 22,-000,000 tons yearly during the period 1934-38. While the sources of supply varied from year to year, approximately 4,500,000 tons came from the Argentine, 4,000,000 from continental Europe, 3,000,000 from Canada, nearly 3,000,-000 from Australia and New Zealand, more than 1,000,000 from India and Burma, 1,000,000 from the United States and 5,500,000 from other areas.

Although the government had made some purchases of sugar, wheat and whale oil under the Essential Commodities act of 1938, its food stocks in 1939 were at their normal peacetime level. The effect of these reserve purchases was merely to transfer to government financing the stocks which normally were held privately. In the first few months of World War II supplies to the United Kingdom continued to move freely, even from Denmark and the Baltic countries. However, by July 1940 the problem of

food imports became critical. Germany had control of the main continental European sources of food, cutting off supplies of 1,750,000 tons annually. These included a large proportion of the high-quality foods such as bacon and ham. butter, condensed milk and fresh eggs, normally imported. At the same time, Italy had entered the war, thereby disrupting the Mediterranean trade to the extent that supplies of dried fruit and other foods were cut off from eastern Europe and seriously curtailing food shipments from the middle east. The demand for ships for other war purposes did not permit the United Kingdom to increase materially its food shipments at that time from more distant producing areas. As a result, the national diet during the fall and winter of 1940-41 was changed greatly by reducing the amount of meat, fish, eggs, fats and sugar from 10% to 40% and, at the same time, by gradually increasing the consumption of grain products, vegetables, potatoes and milk when possible.

Simultaneously, the ministry of agriculture was making a concerted effort to secure maximum domestic production and to direct it toward food suitable for direct human consumption; and to replace the 7,000,000–8,000,000 tons of animal feeds which the United Kingdom had been importing annually. Pastures were plowed up, unused lands were converted into pastures, family gardens were encouraged, animal feedstuffs were rationed, production subsidies were granted and numerous other measures were taken. As a result, the United Kingdom by 1943 had attained its largest arable acreage in 60 years despite the loss of considerable area for airfields and other military purposes.

Japan's entry into World War II further intensified the British food supply problems by eliminating the normal

The aftermath of war in Nuernberg, Germany, with hungry civilians scouring garbage dumps in search of food

source for all the sago and tapioca, nearly all the pepper, half the copra and one-third the coconut oil. Of Britain's prewar supply of rice 80% was lost with the fall of Indo-China, Burma and Siam. Sources of sugar, tea and vegetable oils were lost with the Japanese occupation of the Netherlands Indies and the Philippines. The food situation reached its most critical position in the summer and winter of 1942 when the U-boat menace was at its peak. All available shipping space was needed for military operations, and supplies from overseas sources had not yet attained significant proportions. It was during this period that the extraction rate for flour, already raised to 75%, was increased to 85% and intensive campaigns were carried on to stimulate potato consumption.

The distribution and prices of essential foods were strictly regulated through all steps in the distribution chain from producer, processor, distributor, down to the individual consumer. This created a tremendous administrative task which was efficiently carried out. The government became the sole importer of foodstuffs and also acquired control over all home-produced food. Experts from particular food trades were appointed to the ministry of food to advise on the allocation, economic utilization of raw materials and processing of all foodstuffs. Special wartime associations or companies carried out commercial operations for the ministry which retained the ownership of almost every type of food down to the first stage of distribution. Food allocations were made in accordance with the number of retailers registered with each wholesaler, and in turn according to the total number of customers registered with the retailer. Foods for which registration was not required were distributed in proportion to prewar trade. Adjustments in allocations were made, where necessary, to keep pace with the wartime movements of population. At the same time, schemes for zoning, delimiting areas of distribution and rationalizing retail deliv-



eries were put into operation to effect economies in food transport. By establishing these controls the government was able to manage the nation's food resources in the interests of obtaining the maximum nutritional value from the available supplies and to maintain equitable distribution among consumer groups.

Rationing (q.v.), introduced in Jan. 1940, was primarily designed to ensure that supplies of essential foodstuffs at controlled prices were available to all types of consumers in all parts of the country.

By these and other measures the government ensured that the people were adequately fed. While the diet was monotonous and consumers were forced to forgo many of their favorite dishes, the net effect of this carefully planned and managed food program was that the wartime nutritional status of the population, especially the lower income classes, was improved over prewar levels, even though the average caloric value of the diet fell somewhat.

(For wartime food developments in the United States, Canada and in the British empire, see AGRICULTURE; DIETLITICS; LEND-LEASE; RATIONING.)

Far East.-The adverse effect of World War II on the food situation of the orient varied greatly in different countries at different phases of the war. The Japanese occupation of the rice-surplus countries of southeast Asia (Burma, Siam and Indo-China) deprived millions of persons in India and Ceylon of their marginal supplies of imported rice. Although India occupied an important place in the world of agriculture, its prewar production of food grains, even when supplemented by imports of 1,500,000 tons of rice from Burma, fell short of the nutritional requirements of the country. The export demand for the middle east and the military procurement reduced the supplies of rice and wheat available for civilian consumption. Failure of the rice crop in Bengal, shortage of transportation and administrative disorganization caused the worst famine in the history of the country with the reported loss of 2,000,000 lives.

A "Grow More Food" campaign was launched in India in April 1942 with significant results. After the Bengal famine the Indian authorities improved and extended the government procurement of food grains, established a system of planned movements of supplies from surplus to deficit areas, imported wheat as the shipping situation permitted and finally introduced rationing for the large cities and many small ones. The energetic measures taken by the government for conserving supplies and reducing the ration in 1945 averted a widespread famine in 1945-46.

World War II did not affect the food supply of China so greatly as might have been expected. Japanese occupation of the Chinese territories was fairly rapid, and the bulk of the food products was consumed in or near the areas of production. There were temporary shortages caused by battles or tying up of transportation for military operations. The breaching of the Yellow river dyke in Honan in 1938 by Chinese armies to stem the Japanese advance laid waste about 2,000,000 ac. in Honan and Anhwei. The greatest food shortage occurred in 1943 in Honan because of a drought and Chinese military requisitions. During the last stages of the war, acute shortages occurred in parts of Kwangsi, Kweichow and Honan.

The Japanese authorities took measures to improve the food situation of the occupied territories of Malaya, Indo-China, Indonesia and the Philippines by compelling greater production of food grains in plantations and other areas devoted to growing export crops and by importing

supplies from the rice-surplus areas of Burma and Indo-China. It was difficult to assess the degree of success of the measures taken to make the deficit areas self-supporting in food. As World War II progressed, it became increasingly difficult for the Japanese authorities to move rice from surplus to deficit areas, with the result that the food situation in the latter became more and more acute. The Japanese occupation made the inter-island communication and transport of foodstuffs difficult in Indonesia and the Philippines and resulted in local shortages. A lack of export demand, scarcity of fertilizers, shortage of incentive goods, destruction or damage of farm implements and conversion of rice mills to war uses during the Japanese occupation ruined the rice industry of Burma and Indo-China.

The food situation in Siam was comparatively better during World War II, and that country was the first to emerge after the Japanese surrender as a substantial exporter of rice.

Other Regions.—Increased food demands and trade dislocations encouraged the modernization and expansion of agriculture in parts of the regions less directly affected by hostilities, such as the middle cast, Central and South America, Africa and certain British, Dutch and French possessions. Much of the increased output was absorbed by the local populations, with the augmented purchasing power resultant from higher industrial activity. Thus, agriculture in most of those areas profited by World War II. So did many classes of consumers who, for the first time, were able to obtain more and better food.

The middle east did not feel the effects of World War II until 1940. That region, which normally exports cotton, nuts, fruits, grains, onions, tobacco and mineral oil, had supplied the United Kingdom with some foods earlier and in some instances were successfully trading with the axis countries. When Italy entered the war and disrupted Mediterranean shipping, the economy of the middle east became greatly disorganized. Egypt, Palestine, Syria and Lebanon, for example, lost their foreign trade and the governments had to assume control of the distribution of fertilizers, kerosene and sugar to avoid hoarding and profiteering. A ministry of supplies was created in Egypt, and similar agencies were organized in every country.

In 1941 the British and United States governments created the Middle East Supply centre (M.E.S.C.) to supervise the movement of food and other products to countries of the middle east, to increase their production of foodstuffs and to obtain, wherever possible, some food supplies for the Allied armies. The M.E.S.C. developed a regional food policy which succeeded in averting serious shortages in deficit areas, and which enabled the middle east to furnish considerable supplies for export to Europe, to contiguous countries and to the huge armies standing from the Caucasus and Mesopotamia to the Nile valley, the Sahara and the Red sea. This was accomplished in the face of the traditional mistrust of the farmers toward foreign governments. The middle eastern farmer regarded war as an armed conflict between foreign interests at his own expense. His natural reaction was to hoard as much foodstuffs, grains and gold as possible.

In parts of Latin America, where the feudal latifundia system of land ownership still predominated, and many countries were restricted to monoculture farming, World War II caused a noticeable reorientation of agriculture. At the outbreak of the war, a large demand for oils and

fats and livestock products arose, particularly within countries where industry had expanded to supply the Allied war effort. As food supplies grew tighter in nearly all countries, emergency decrees and laws fixing prices, regulating exports, freezing land rentals and restricting distribution of critically scarce commodities were frequently adopted. Agreements of reciprocal assistance to solve particular problems grew more widespread, and exports between the various Latin American nations expanded considerably. Between 1940 and 1943, for example, exports of livestock from Chile to other South American countries nearly doubled. As production gradually increased, many nations were able to change from a food import to a food export basis, as did the Dominican Republic in the case of rice.

Before World War II, some Latin American nations imported much edible oil and the entire continent was a net importer of rice. As wartime shipping shortages disrupted this trade, rice production in Brazil, Chile, Ecuador and the Dominican Republic expanded greatly. To offset the loss of olive oil from the Mediterranean region, and vegetable oils from southeastern Asia, Brazil and other nations increased peanut, babassu and sunflower output and the quantity of cotton seed crushed.

Postwar Period

Early in World War II it was recognized that the collapse of the axis powers would probably disrupt the economy of occupied countries and bring millions of persons to the verge of starvation. This led the United States and a number of other governments to give consideration to postwar problems of relief and rehabilitation. An inter-allied committee on postwar requirements was established in London to stimulate and help co-ordinate intergovernmental studies of these problems and especially to assess the requirements of each European country during the first 18 months after liberation and determine possible sources of supplies of relief foods, agricultural equipment and supplies, clothing and other commodities. Similarly, the allied military commands made plans for meeting urgent civilian food relief problems during the immediate period of liberation before other types of organized relief could be established in the area.

The United Nations Relief and Rehabilitation administration (U.N.R.R.A.) (q.v.) was established in Sept. 1943 and soon became the centre for further programming of relief supplies. By agreement, its operations were concerned largely with displaced persons and with those occupied countries of Europe and Asia which were unable to pay for their imports of essential commodities.

Starting operations during a critical phase of World War II, U.N.R.R.A. was confronted with many problems and obstacles in obtaining adequate supplies of foods. While all governments agreed that large quantities of food would be required for relief, they were reluctant during the war to earmark supplies for this purpose or to make sizable food allocations to U.N.R.R.A. which could be purchased and held in reserve until needed. Those who supported this policy argued that all the available foods were needed for current military and civilian consumption and that none could be spared for building up relief stock piles for use at some uncertain date in the future. They argued further that, when needed, adequate relief supplies could probably be obtained from current production and stocks because military and other urgent civilian requirements would taper off at the end of World War II.

Back of many of these arguments was the ever present fear that the major food-producing countries would be left with huge surpluses should the war end suddenly.

The net effect was that U.N.R.R.A. was continuously handicapped in its relief operations and that a sizable volume of grain and other foods that could have been reserved for relief purposes early in World War II were depleted in fattening livestock, in the production of alcohol and in maintaining a higher level of civilian consumption than was necessary. When the time came to meet food relief requirements out of current production and stocks in 1944, 1945 and 1946, crop production in the southern hemisphere was reduced by drought, grain stocks were down to the danger level, high civilian purchasing power in many countries was creating pressure for more foods and encouraging extensive black market operations; all these situations, combined with the continued high military requirements, served to make it impossible to divert as large quantities of food for relief purposes as were needed. Notwithstanding these handicaps, U.N.R.R.A. managed to procure and distribute sizable quantities of food in Europe and China and thereby help avoid mass starvation in many cities.

The initial U.N.R.R.A. field operations were centred in North Africa and Italy, where special attention was given to the problems of displaced persons. Later its food relief and agricultural rehabilitation program was extended into 18 different nations and areas. By the end of 1946 U.N.R.R.A. had shipped more than 6,000,000 tons of food, valued at nearly \$1,000,000,000 and about 1,700,000 tons of agricultural rehabilitation supplies valued at more than \$100,000,000. Approximately 72% of its food was exported from the United States. Grain accounted for 67% of all U.N.R.R.A. food shipments and high protein foods, including meat, soya products, fish, dairy products and fats and oils, including soap, made up 20%. The remaining 13% was largely fruits and vegetables, sugar and pulses.

Italy received more food than any other individual nation, getting more than 1,000,000 tons of grain and more than 300,000 tons of other foods. Greece was the next largest recipient, with nearly 1,000,000 tons of grain and about 300,000 tons of other foods. Yugoslavia, China, Czechoslovakia, Poland, Russia (Byelorussia and the Ukraine) and Finland, together with the 2 nations just mentioned, received 95% of all U.N.R.R.A. food shipments.

The bulk of U.N.R.R.A.'s funds for food procurement was derived from the United States contribution, which, as of Sept. 30, 1946, constituted 73% of all funds received. However, proportionate contributions were made by 29 of U.N.R.R.A.'s 31 other noninvaded member governments.

Urgent Problems.—The cessation of hostilities introduced a host of difficult problems of food production, distribution and management both for the liberated countries and their allies. The needs of 750,000,000 more people had to be considered in the allocation and distribution of available food supplies. The termination of lendlease and mutual-aid programs created new financing problems. Demobilization and reconversion contributed to the shipping and transportation bottlenecks. High civilian purchasing power and inflation in many countries coupled with a general reaction against wartime controls increased the difficulties of managing and conserving the available food resources and of making equitable allocations to needy areas. Food production in the major exporting countries had to be maintained at maximum levels while scarce supplies of fertilizer, machinery and other production goods had to be shared with the liberated countries. New political frontiers created obstacles to the movement of food and agricultural supplies between areas. Hoarding and speculation disrupted rationing systems and encouraged black market operations.

In Europe the process of liberation and the subsequent economic breakdown was far more destructive to agriculture than was the German invasion. As a consequence, food production in 1945 had declined to a level of some 20% less than prewar. Even those areas which had maintained relatively high levels of output during World War II experienced a sharp drop in yields as a result of reduced supplies of fertilizers, seeds, workstock, machinery and labour. Some areas were especially affected by the dislocation of rural population, the disruption of transportation and the destruction of the land.

The battles fought in the U.S.S.R., Italy, France, the Netherlands, Poland, Germany and the southeastern countries had destroyed farm buildings, livestock and equipment and covered large areas with minefields. In the Netherlands, where people for centuries had been busy reclaiming land from the sea, the German army had inundated about 220,000 ha., (543,400 ac.) of which about 77,000 ha. (190,190 ac.) were flooded with salt water. Much land remained uncultivated in Greece and Poland, where almost a third of the villages were destroyed, and in Yugoslavia, where war and civil war had prevented many peasants from returning to the land. The expulsion of the population from Germany's agricultural surplus area east of the Oder and Neisse rivers brought agricultural production to a standstill in a region which had produced 25% of Germany's food supply. Severe drought in central and southern Europe and shortage of agricultural equipment in Russia helped reduce the grain crop to one-half of normal.

The surrender of Japan brought another large segment of the world's population of the far east into the position of "claimants" for a share of the already limited food supplies. This area, despite its low levels of consumption, was a net exporter of foods prior to World War II, especially rice, sugar and vegetable oils. But Japanese occupation, adverse weather conditions, shortages of fertilizers, seeds and draft animals, dislocations of transport and economic interferences had reduced the 1945 output to the point where the far east became a net importer of foods.

These declines in production were large for most foodstuffs but were especially critical in the case of cereals, particularly rice. It was estimated that 150,000,000 tons of rice (paddy basis) would have been required to give the 1,100,000,000 persons in the area a level of consumption equal to that of prewar. Actually, however, it produced less than 118,000,000 tons of rice in the crop year 1945–46. Most of this reduction took place in Burma, Indo-China, Korea and Formosa, the areas which exported large quantities of rice before World War II. Production of oils and sugar in the Philippines, East Indies and other Pacific areas likewise was reduced to a fraction of their prewar levels.

World Food Crisis.—The cumulative effects of low indigenous production in liberated areas, of droughts in the southern hemisphere and the disappearance of food stocks in the food-exporting countries following the relaxation of government controls, all served to bring the world face to face with a major food crisis during the winter of 1945–46. Despite their all-out production efforts, the food-exporting countries could not offset the reduced output resulting from six years of war. As a consequence, the per caput world food supply available during the

consumption year 1945-46 was from 12% to 15% less than prewar. Shortages of this magnitude, while serious from a world point of view, would not have precipitated a major food crisis had the available supplies been equitably distributed. But this was not the situation. Rather, food consumption in many countries was being maintained at per caput levels close to, and often above, prewar levels, while consumers in war-devastated areas, especially those in urban centres, were frequently existing on supplies equal to one-half or two-thirds of prewar. In the United States, for example, the 1945-46 consumption was approximately 15% higher while, in contrast, parts of Asia were as low as 60% of prewar consumption.

The urgency of this situation prompted the Food and Agriculture organization of the United Nations to call a special meeting of governments in May 1946 for the purpose of taking international action to cope with the food emergency. This meeting not only helped clarify the picture with respect to the character and extent of distress but, in addition, led the governments to establish the International Emergency Food council. This council, which replaced the Combined Food board, was enlarged to include all important food-importing as well as food-exporting countries and was given the task of allocating food supplies during the existence of the world food emergency.

U.N.R.R.A. likewise played a very important role in helping meet the food emergency in Europe and China by delivering about 60% of its total relief foods during the consumption year 1945–46. Individual nations such as the United States and Canada made a concerted effort to move large quantities of wheat into the deficit zones. England and other food-importing countries held their requests for allocation to a minimum so that more foods could be made available to the more distressed areas. Through the combined efforts of many governments and these international organizations the food crisis was kept from reaching famine proportions.

The World Food Balance in 1946.—More favourable crop conditions in the southern hemisphere and a slight recovery of agriculture in war-ravaged areas resulted in slight improvements in 1946. However, wide disparities still existed in the distribution of available supplies. For some countries, the food deficiencies during the consumption year 1946–47 were fully as critical as the previous winter.

The most critical deficits existed in Europe and Asia, where supplies of fats and oils, bread grains, rice and sugar were still very low. Production of wheat and rye in 1946 was about 12% more than the small crop of 1945–46 but about 95% of prewar. The 1946 rice crop exceeded the previous harvest by about 10% but remained only about 90% of prewar. Sugar output was about 10% more than in the preceding year but 14% less than before World War II. World production of visible fats and oils available for consumption was estimated at about 83% of prewar.

The food position of individual countries, measured in terms of calories available during the consumption year July 1946–June 1947, is summarized in the accompanying table. It should be noted that these data are national averages and conceal important variations in consumption within each country and between various consumer groups. These disparities, which were greater in 1945 and 1946 than they were during World War II, represented an important hidden element in the food situation that was

Estimated 1946-47 Consumption Levels* Countries with more than Countries with 80-95% Countries with less than Estimated Prewar Consumption 95% of prewar diet 80% of prewar diet (Calories per caput daily) Mexico Colombia Philippines India (parts of) 1,800-2,100 India (parts of) Central America Indo-China Siam Caribbean area China (parts of) Algeria Tunisia China (parts of) Tropical Africa Burma South Africa Portugal Syria and Lebanon Chile French Morocco Brazil Palestine 2,400-2,700 Manchuria (parts of) Manchuria (parts of) Italy Turkey Poland Spain Hungary U.S.S.R. U.S.S.R.
Bulgaria
Yugoslavia
Belgium
Uruguay
Cuba Czechoslovakia Rumania 2,700-3,000 Paraguay Finland Netherlands France Sweden Canada United Kingdom Australia Switzerland Ireland 3,000-3,300 United States

*Countries are arranged in order of their relative prewar food consumption in terms of calories. Data cover the consumption year July 1946-June 1947,
Source: FAO World Food Appraisal, Dec. 26, 1946.

often difficult to assess but which could not be overlooked. (H. A. V.; H. R. Ty.)

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Football

Football, the most popular of all U.S. athletic games on the basis of public patronage, was a mighty oak on the sporting scene in the ten years from 1937 through 1946. The strength of its roots and its hold on the public were amply demonstrated during this trying period. The effects of the worst depression in history were still being felt in the late '30s, and then the United States found itself caught up in the greatest catastrophe man had brought upon himself.

All sports during this period felt the pinch of stringencies, and some of them had to give up. Baseball during the depression introduced night play as a means of attracting workers through its turnstiles, and during the war added to the number of games played under arc lights when "brownout" restrictions were lifted. A number of sports gave up the ghost because of losses of playing personnel, a decline in attendance and governmental restrictions.

Football carried on through the depression and the war years. Despite its many problems, which might have been too staggering to permit further operations had the war not been brought to an end in 1945, it was never

threatened with insolvency. Receipts fell off at times, and retrenchment and pruning were called for in preparing budgets.

Some colleges dropped out, primarily because of manpower shortages. But the great majority of the teams continued to function without a lapse. Some of them enjoyed as prosperous years as they had ever known, and there were teams that attracted 500,000 spectators, or close to that number, for their season of 10 games.

After a marked decline in attendance in 1942 and 1943, public interest picked up. In 1944 and 1945, many schools broke all-time records in receipts, and in 1946 football enjoyed its greatest prosperity in history as thousands of former stars returned to the campus from the service ranks to raise the calibre of

the play back to the formervarsity standard.

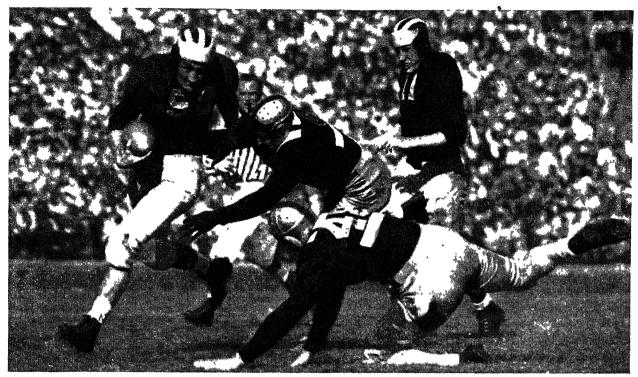
Argentina

New Zealand

Like baseball, football provided a beneficial relaxation for the public from the strains of war. The quality of the play dropped sharply after 1943, as the stars were taken by selective service. The calibre of the game generally was not much above the level of freshman competition, with 17-year-olds and players physically disqualified for the draft in the 4-F classification manning the ranks. Nevertheless, the games were as exciting as ever. Great teams continued to arise, notably Army's invincibles of 1944, 1945 and 1946, with the most celebrated pair of backs of modern times—Felix "Doc" Blanchard and Glenn Davis—and the public filled the stadia; crowds often exceeded 60,000, sometimes 70,000 and in cases, 90,000 and even 100,000.

The worth of football was proved in the fighting ranks. Football players did not have a monopoly in winning battle decorations or showing high qualities of leadership. Nor was this a monopoly for athletes in general. Men who had had no association with sports showed as much leadership and initiative as those who had made the headlines of the nation's press with their feats on the gridiron, the diamond, the cinder paths, the tennis court, the polo field and the golf course. But football players distinguished themselves in unusual numbers in all branches of the service and particularly in the air arm. The 1926 eleven of Army, in particular, had a brilliant record and suffered heavy casualties, including Brig. Gen. Rosy O'Donnell, who came close to losing his life as leader of the 20th bomber command of Superfortresses.

Service Men and "Civilian" Teams.—West Point became "sold" on football during the war years as never before. It emphasized the value of football with its stressing of team play and the sacrifice of the individual for the good of the whole command or organization, its development of initiative and quick thinking under fire, as inculcating the virtues that make for good officers. There was some



Tom Harmon scoring for Michigan against Michigan State at Ann Arbor in Oct. 1940. Michigan won 21 to 14, with 3 touchdowns by Harmon, outstanding player of the year and winner of the Heisman and Maxwell trophies

criticism that Army was going too far in attracting stars of the gridiron from other schools, but West Point answered that it was seeking the best candidates possible for its cadet ranks and that men who excelled on the football field were the finest kind of officer material.

Navy took the same attitude. It was a Navy man, Capt. Thomas Hamilton, who, more than any one else, made it possible for football to continue during the war years. A brilliant player and then a successful coach at Annapolis, Capt. Hamilton advocated keeping football going as the finest kind of preparation for young men entering the service. There were those who argued that competitive athletics had no place in the scheme for training the young men who were going into the army, navy and marine corps, that there was not time enough for team sports in view of the great masses who had to be conditioned.

Hamilton won his fight. In the navy preflight schools that were organized, he installed the physical training program of which football was an important part. Famous coaches were commissioned and put in charge of the squads, and the preflight teams were among the best, playing most of their games with college elevens.

It was in the colleges themselves that Hamilton's program was especially important. Through his advocacy, navy trainees who were sent to the colleges were permitted to participate in varsity sports, including football. It was these trainees who made it possible for intercollegiate athletics to carry on. Without them, sports would have been impossible except on an informal, intramural basis, for there was not the civilian manpower on the campus to provide the material in 1943 and 1944. Indeed, many colleges would have had to close had not the army and navy sent their officer material to them for training in the classrooms.

The army adopted a different attitude toward sports. It did not permit its trainees to engage in varsity competition. Those colleges with army units had to give up football in most instances, though a few carried on with youths who were under the draft age or had physical disabilities. Those with navy units continued to put teams on the field, and the navy and marine trainees composed three-quarters of the squad and furnished most of the stars at most institutions.

After 1943, the big-name stars disappeared from the ranks of the navy trainees. By the end of that year they had gone on to advanced training bases or to the fighting fronts. The new trainees coming in in 1944 and 1945 were unknowns, most of them without previous college football experience. As a consequence, there was a sharp drop in the strength of the teams and in the calibre of football.

Coaches, handicapped by undermanned staffs and short practice sessions that had to fit in with navy programs on the campus, were working with players who were extremely young and inexperienced—the equivalent of freshmen. With the exception of Army and Navy, whose cadets and midshipmen were not subject to the draft and who were bringing in stars from other colleges, every team felt the pinch and suffered a letdown in quality.

Notre Dame, which had one of the finest teams in its history in 1943, offered a typical example. The Fighting Irish suffered their most humiliating defeat in history in losing by 59-0 to Army in 1944 and also were outclassed by Navy. In 1945 they were overwhelmed by Army again by 48-0 but came off with a tie score against Navy. Their coach, Frank Leahy, went into the navy after the 1943 season, but even had he been in charge the next two years Notre Dame could hardly have given Army a close fight, so great was the disparity in the experience and ability of the manpower.

Notre Dame's 1943 eleven and Earl Blaik's Army invincibles, who went through the seasons of 1944, 1945 and 1946 without defeat, winning 27 of 28 games and playing to a scoreless tie with Notre Dame in the other (in 1946), were the two great college organizations of the

war period. They ranked with the best football teams of all time, even though the Fighting Irish were defeated in the last half minute of their final game, with Great Lakes Naval Training station, on a long, last-ditch pass. Angelo Bertelli, who was quarterback until called into active service by the marine corps after the game with Navy, and Johnny Lujack, who succeeded him for the rest of the season, were two of the biggest names in football during this period.

The shining lights above all others, however, were Army's Blanchard and Davis, known as "Mr. Inside and Mr. Outside," or "B. and D."

Prior to the war, the standout teams were Pittsburgh and California in 1937, Texas Christian in 1938, Texas A. & M., Tennessee (unscored on in 23 successive games) and Cornell in 1939; Minnesota, Stanford's masters of the T formation, and Tennessee in 1940; and Minnesota, Duke and Leahy's first Notre Dame eleven, the first to go through unbeaten since 1930 in 1941.

Stars and Coaches.-The most famous players of the period included Clinton Frank of Yale, Byron (Whizzer) White of Colorado, Davy O'Brien of Texas Christian, Marshall Goldberg of Pitt, Nile Kinnick of Iowa, Tom Harmon of Michigan, Clark Hinkle of Vanderbilt, Jack Crain of Texas, Brud Holland of Cornell, Bob MacLeod of Dartmouth, Sid Luckman of Columbia, Ki Aldrich of Texas Christian, Paul Christman of Missouri, George Cafego of Tennessee, Nick Drahos of Cornell, Banks Mc-Fadden of Clemson, John Kimbrough of Texas A. & M, Frankie Albert and Norman Standlee of Stanford, Ed. Doherty of Boston college, Augie Lio of Georgetown, Bruce Smith of Minnesota, Bill Dudley of Virginia, Bob Reinhard of California, Frank Sinkwich of Georgia, Paul Governali of Columbia, Otto Graham of Northwestern, Angelo Bertelli, Creighton Miller and Jim White of Notre Dame, Bob Odell of Pennsylvania, Eddie Prokop of Georgia Tech and Bill Daley of Minnesota and Michigan.

Others, besides Blanchard and Davis of Army, included Les Horvath of Ohio State, Bob Kelly of Notre Dame, Don Whitmire and Bob Jenkins of Navy, Buddy Young of Illinois, Bob Fenimore of Oklahoma A. & M., Paul Walker of Yale, Herman Wedemeyer of St. Mary's (Calif.), Harry Gılmer and Vaughn Mancha of Alabama, Pete Pihos of Indiana, Clyde Scott, Dick Scott and Leon Bramlett of Navy, Tex Coulter, Hank Foldberg and Arnold Tucker of Army, Charley Trippi of Georgia, Johnny Lujack and George Strohmeyer of Notre Dame, Fritz Barzilauskas of Yale, Frank Wydo of Cornell, George Savitsky of Penn, Hub Bechtol and Bobby Lane of Texas, Burr Baldwin of the University of California at Los Angeles, Warren Amling of Ohio State, John Ferraro of Southern California and Charley Justice of North Carolina.

Coaches who distinguished themselves during the tenyear period included Frank Leahy, Earl Blaik, Clark Shaughnessy, Dr. Eddie Anderson, Bill Alexander, Alonzo Stagg, Bo McMillin, Carroll Widdoes, Bernie Bierman, Bob Neyland, Fritz Crisler, Bill Kern, Hooks Mylin, Frank Thomas, Carl Snavely, Lou Little, Homer Norton, Dutch Meyer, Jock Sutherland, Jim Crowley, Henry Frnka, Jack Haggerty, Wallace Butts, Wallace Wade, Stub Allison, Howard Jones, Lon Stiner, Biff Jones, Bert LaBrucherie.

Leahy, coming out of obscurity to the post of head coach at Boston college in 1939, turned out teams that lost only one game in his two seasons there. Going to Notre Dame in 1941, he developed the first undefeated eleven at South Bend since 1930, Knute Rockne's last year,

and was voted the coach of the year. He turned out the champion team of 1943 before going into the navy.

Shaughnessy, in his first year at Stanford, developed one of the most exciting teams of modern times. With George Halas, owner and coach of the Chicago Bears, he worked out the T formation that was to become the vogue in a few years. They revived the old T, from which Notre Dame had shifted into its box formation. They introduced the back in motion and gave football its fastest-striking attack, with the quarterback, stationed under centre, handing off the ball to halfbacks and fullback starting with darting speed on quick opening plays. Man-for-man brush blocking, lateral shuttling of the ball and pitch-out passes were features of the attack, in which the key man was the quarterback, who did almost all of the passing and handled the ball almost without exception

Shaughnessy's Stanford team, with standouts in quarter-back Frankie Albert, fullback Norman Standlee and half-back Pete Kmetovic, defeated all opponents while the Bears were winning the professional championship. The brilliant success of these two teams with the T awakened the country's coaches to the possibilities of the new formation, though it was not until 1942 that the swing toward it and away from the single wing and the Notre Dame box definitely got under way. Shaughnessy was voted the coach of the year.

Anderson, after conspicuous success at Holy Cross, went to Iowa in 1939. The Hawkeyes had finished at the bottom of the Big Nine conference the year before. Anderson worked such a change that they lost only one game and numbered Notre Dame and Minnesota among their victims. He was voted coach of the year, and Nile Kinnick, who was to lose his life in the war, was named the player of the year.

Crisler, going to Michigan in 1938 after a fine record at Princeton, built a team that lost only to Minnesota, and that by a point after touchdown. The coaching award of the year, however, went to Bill Kern of Carnegie Tech.

Alexander, one of the coaches longest in the game and one of the most respected, received the coaching award in 1942 at the end of his 23rd year at Georgia Tech, two years before he retired. Stagg, the grand old patriarch of football, who refused to be retired after more than 40 years at Chicago and went to the College of the Pacific. was honoured in 1943. Widdoes, in his first year at Ohio State, where he took charge after Paul Brown went into the navy, brought the Buckeyes through unbeaten to the Western conference championship in 1944. He was named the coach of the year and his quarterback, Les Horvath, was named the player of the year and received the Heisman trophy. McMillin in 1945 gave Indiana its first undefeated team and its first Western conference champion in the 46 years it had been in the organization.

Blaik, as coach of the greatest team in Army history, as well as of Dartmouth's undefeated eleven of 1937, rated among the most honoured men in his profession. His Army machine of 1944, 1945 and 1946 proved its greatness both in war and peacetime. Its record of 27 victories and one tie stood among the finest in football. A master of the single wing attack of the Pittsburgh type with deep reverses, he went over to the T at West Point and developed one of the best offenses of its kind in football, with one of the fastest halfbacks the game had ever known, Glenn Davis, to reap the most of its speed possibilities.

Bierman gave Minnesota six conference champions in a period of eight years and was the top man in the Big

Ninc, if not in the country before he went into the Marine Corps. Thomas at Alabama, Wade at Duke and Neyland at Tennessee were the triumvirate of the south, and Sutherland was one of the hardest men in the country to beat when he was at Pitt, as Howard Jones was at Southern California. Jones's teams never lost a game in the Rose bowl, in which they played five times.

Teams of the Decade.—Sutherland's 1937 Pittsburgh eleven was ranked as the best in the country, though Stub Allison's California Bears were called a "wonder team" and went through the season unbeaten. Fordham, Alabama, Dartmouth and Santa Clara also were undefeated. The Panthers and Crowley's Fordham Rams played to a scoreless tie, their third in succession against each other. California defeated Alabama in the Rose bowl.

Dutch Meyer's Texas Christian eleven was given top rating in 1938, followed by Tennessee, Duke, which was unscored on; Southern California, Notre Dame, Carnegie Tech and Oklahoma. With Davy O'Brien at quarter and Ki Aldrich at centre, the Horned Frogs won all ten games and defeated Carnegie in the Sugar bowl. In the Rose bowl, Southern California won from Duke.

Texas A. & M. coached by Homer Norton, duplicated Texas Christian's record in 1939 to win the number one spot, though Tennessee, unscored on in 23 successive games, was a strong rival for the honours. Southern California, Cornell, which furnished one of the year's big victories at the expense of Ohio State, and Tulane were other undefcated leaders. Southern California won from Tennessee in the Rose bowl, and Texas A. & M. defeated Tulane in the Sugar bowl.

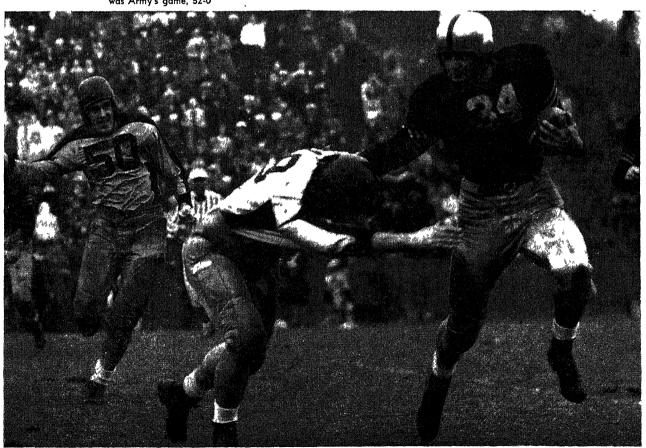
Minnesota, Stanford, Michigan, Tennessee and Boston

Glenn Davis (34), outstanding Army halfback, carrying the ball in a 4-yd. gain against Columbia at New York city in Oct. 1943 It was Army's game, 52-0 college, all undefeated except Michigan, were the leaders in 1940. Minnesota, with its difficult schedule, was generally rated the top team, although Stanford, with its T formation, was the "glamour" eleven. Tennessee went through its third successive season without a defeat or a tie under Neyland. That was the year of the famous fifth down. Cornell, undefeated in 18 successive games, was trailing Dartmouth by 3-0. On the last play it completed a pass for a touchdown, to win by 7-3. It turned out that Snavely's Big Red team had been given a fifth down, whereupon Cornell conceded the victory to Dartmouth. That same day Leahy's Boston college team ended Georgetown's long winning streak in one of the best games of the year, winning by 19-18.

One of the biggest surprises football had experienced in years came when Texas A. & M. was upset in its final game by Texas. Stanford was the victor over Nebraska in the Rose bowl and Boston college over Tennessee in the Sugar bowl.

Minnesota was again ranked at the top in 1941 as it ran its winning streak to 17 games. Duke and Notre Dame, both unbeaten, had the next best records. Texas was rated as the best team in Longhorn history but met with a stunning setback in its tie with Baylor and then a loss to Texas Christian. Fordham, after winning its first five games, lost to Pittsburgh, which had been beaten five times.

The attack on Pearl Harbor in Dec. 1941 threatened to put an end to the postseason games. War department regulations made it impossible to hold the Rose bowl game at Pasadena, and the game was transferred to Durham, N.C. There Duke played Lon Stiner's Oregon State eleven



and was unexpectedly beaten. Fordham, the leader of the east, defeated Missouri in the Sugar bowl. In the Cotton bowl Alabama won over Texas A. & M., and Georgia defeated Texas Christian in the Orange bowl.

The season of 1942 saw football facing an uncertain outlook. Leading coaches were going into the service; small colleges were giving up the game. Freshmen were made eligible for varsity play to offset the loss of men going into the army and navy. Dimout regulations near the coastlines curtailed practice. Rationing of gas and rubber and the barring of railroad specials cut down heavily on travel, and the size of the crowds at the games fell off. There was a drop of 19% in attendance. Some of the colleges in small communities moved their big games into large cities. Princeton played three games in New York and met Yale at Columbia's Baker field.

The Army-Navy game was ordered to be played at Annapolis, with ticket holders limited to residents within a 10-mi. radius. Less than 12,000 saw the game instead of the usual 100,000 who turned out in Philadelphia. However, 95,000 saw Notre Dame and Southern California play at Los Angeles. Many service teams sprang up to take the place of colleges which were dropping out. Great Lakes and the Iowa Preflight Seahawks were the best of these, and the army air forces put a number of strong teams on the field.

Tulsa, under Frnka, was the only major team to go through the season unbeaten. Boston college, supposedly the best of all, was the victim of an upset by Holy Cross, and Georgia Tech was toppled by Georgia on the final day of the season.

Ohio State was generally ranked first. Georgia, Wisconsin, Tulsa, Georgia Tech, Notre Dame, Tennessee and Boston college followed. Georgia defeated U.C.L.A. in the Rose bowl and Tennessee won from Tulsa in the Sugar bowl. In the Orange bowl, Alabama was the victor over Boston college, and Texas defeated Georgia Tech in the Cotton bowl.

The year 1943 saw a number of big powers drop out as the draft cleared the campus of manpower. They included Fordham, Stanford, Alabama, Tennessee, Florida, Mississippi, Mississippi State, Syracuse, Georgetown, Santa Clara, Oregon, Oregon State and Washington State. Harvard, Boston college and Vanderbilt carried on informally. The navy trainees in the colleges were keeping the game alive, but transfer of these service men at midterm did strange things. Some of the trainees played in the second term against the team they had played for during the first half of the season. A few of them found themselves playing against their alma mater of peacetime. Some of the transferees played twice against the same team in the same season.

Again the Army-Navy game was restricted, this time to West Point. Attendance generally fell off another 18%, but huge crowds continued to turn out at the big games. Notre Dame and Michigan played to 86,000. Notre Dame was ranked the number one team. It was followed by the Iowa Seahawks of Bierman, against which it had a narrow escape; Michigan, Navy, Purdue, Great Lakes and Duke.

The Rose bowl game of 1943 was played between Southern California and Washington. Because of travel 1 testrictions, the Pacific Coast conference had been divided into two groups, each limiting its games to its own section. The winners in the north and the south met in the Rose bowl to determine the conference champion, and Southern California won. In the Sugar bowl, Georgia

Tech defeated Tulsa.

The future of football seemed dark indeed in 1944, but the game carried on. The quality of play fell off markedly, but the crowds came out in big numbers to see the 17-year-old freshmen and the 4-Fs play. There was a 14% rise in attendance. The Army-Navy game was held as a war bond promotion event in Baltimore.

Army was by far the standout team as it went through its first perfect season since 1916, rolling up 504 points to 35 for the opposition and defeating Notre Dame for the first time since 1931 with its 59-0 rout. Navy was supposed to be stronger than Army but met with early reverses and then came on strong. It barely lost out to Ohio State for second place in the national ranking. Ohio State had a perfect record with its all-civilian team and won the Big Nine championship. Southern California, Michigan, Notre Dame, Duke, Tennessee and Georgia Tech were other leaders. Yale went through its first season without defeat since 1924. Southern California defeated Tennessee in the Rose bowl and Duke won from Alabama in the Sugar bowl. The Randolph Field Ramblers and Bainbridge Naval Training centre were the strongest service teams. The Ramblers defeated the 2nd air force Superbombers for the championship of the army air forces.

In 1945 the whole picture of intercollegiate football changed. The war was at an end. A few former stars had started to trickle back in 1944. Now they were returning in larger numbers, some of them being invalided out of service and recovering from war wounds in time to play. Colleges that had given up the game were returning to the fold, notably those in the Southeastern conference. Coaches were also coming back from the service. They included Dick Harlow at Harvard, Tuss McLaughry at Dartmouth, Wallace Wade at Duke and Bernie Bierman at Minnesota.

The Intercollegiate Football Rules committee met for the first time since the United States entered World War II. During the war, the chairman of the committee, Bill Bingham of Harvard, was serving in the army, and the rules were frozen for the duration. Now the solons held session and put through one highly important change. They permitted the forward pass to be thrown from any point behind the line of scrimmage, as in professional football, doing away with the five-yd. restriction. This was a big boon to the attack and particularly to the T formation.

The T formation had definitely become the vogue by 1943, when Army, Notre Dame and Ohio State adopted it. There was a clamour for changes in the rules that year, and when they were not forthcoming the east and the far west colleges decided to make their own changes. They were particularly determined upon putting an end to the growing practice of kicking off out of bounds to prevent the receiving side from running the ball back, and it was left optional with opposing teams to decide whether or not to permit passing from any point behind the line.

The coaches returning from the service in 1945 found that the T formation had supplanted the single wing and the Notre Dame box at all but a few schools. In fact, there was already an advance from the T in the devising of a formation that combined the T and the single wing. At Columbia, Lou Little called this the wing-T formation. Ohio State and Michigan used both the T and the single wing.

The defense was devising a variety of alignments to catch up with the T. Five-man lines were becoming common, but the defense was never static. It was changing to a six or a seven-man line that slid or looped, and doing everything possible to disturb blocking assignments. Be-

cause of the advances on the defense, coaches were trying to work out something new in 1946. Harlow introduced the L formation, which amounted to a single wing with the quarterback stationed four yd. back of his strong side end, instead of the blocking position. By moving the quarterback over to flank his weak side end, he made a double wing formation. Harlow also used the T.

To get back to 1945, interest picked up even more than in 1944, with the calibre of the play improving as old favourites came back to the game from the service. Huge crowds turned out. Attendance was up 35% and records were broken. The Army-Navy game was restored to the Philadelphia Municipal stadium, where more than 100,000 saw Blaik's Black Knights defeat the midshipmen. President Truman and his family attended the game and there was a large gathering of war heroes of flag rank, who had been missing from the scene four to five years or more. On the same day 103,000 saw Southern California and U.C.L.A. play in Los Angeles.

Army was again the standout team as it ran its string of victories to 18. It was the first time a West Point eleven had ever gone through two seasons without defeat. Blanchard and Davis became the talk of the nation more than ever as they led the Army charge in crushing victories over Notre Dame and Pennsylvania, turned back the challenge of Michigan and all others and put over three touchdowns in the first half against Navy to sew up the game.

Navy was ranked as the second best team until, in the final poll, Alabama squeezed ahead by 942 votes to 941. The Crimson Tide had a perfect season and in Harry Gilmer a passer rated the best the south ever had seen. Indiana and Oklahoma A. & M. also enjoyed perfect records. Bob Fenimore of Oklahoma A. & M. was one of the great backs of the year and Indiana's Pete Pihos and Bob Ravensburg were among the best fullbacks and ends of the season. St. Mary's, unbeaten until its final game, was another strong team and its Herman Wedemeyer was ranked by some as the best back in college football. Michigan was another of the best teams and Columbia had its best season in years, losing only to Penn.

Southern California was beaten for the first time in the Rose bowl when it lost to Alabama, 34-14. In the Sugar bowl Oklahoma A. & M. defeated St. Mary's.

Talent Glut.—In 1946, football had its most prosperous season in history and also one of its most exciting. Thousands of former stars, going back as far as the season of 1941, returned to the campus. On some teams players who had been key men in other years found it impossible to "make" the second or third eleven, such was the glut of talent. Many of these returning servicemen failed to come up to expectations. The war and the passing years had worked a change in their mental approach to the game and in their physical qualifications. Some of them had nothing like their old speed, because of the fact they had done so little running for so long. The failure of these players to measure up to their old form was largely responsible for the epidemic of upsets that came throughout the season.

On the other hand, many of the players took up where they had left off, and the quality of the football was vastly superior to what it had been. Army and Navy did not benefit by this movement back to the campus for the reason that they had not lost any of their players to the services during the war years. While other teams had their best squads in history, Annapolis and West Point suffered losses through resignations, chiefly at Navy, and picked up few replacements.

The public, eager for "big time" football again, turned out in unprecedented numbers. On one day early in the season 7 games drew a total of 500,000 fans. Notre Dame, Michigan, Pennsylvania and Army each played to 500,000 spectators. Record crowds gathered in every section, and most teams counted the biggest receipts they had ever known.

Army, with Blanchard and Davis holding forth again and Arnold Tucker proving almost as valuable with his passing and direction of the team at quarterback, continued to lead the parade and went through its third successive season without defeat. However, the cadets were held to a scoreless tie by Notre Dame in the game looked forward to more than any other of the season, and in the final poll, the Fighting Irish went ahead of West Point and were ranked the number one team. So Army finally was ousted from the pinnacle after being at the top continuously for three years, except for one week at the start of the 1946 season when Texas was voted number one.

The ousting of Army came as a result of its narrow escape against Navy in the final game, witnessed by 100,000 spectators including President Truman and a distinguished gathering of cabinet members and army and navy leaders of the highest rank.

Navy had been defeated in 7 successive games before engaging Army, and the cadets were favoured by 28 points. What took place was typical of the season. Army led by 21–6 at the end of the half, and Blanchard and Davis had put on one of their characteristic performances, accounting for all three of their team's touchdowns with long runs and passes.

In the second half the whole complexion of the game changed and a fighting Navy team came within a few yards of registering one of the biggest upsets in football history. The Army line weakened and was outplayed by its opponents. Navy scored two touchdowns more but failed to tie the score, owing to its failure to kick the extra points, and trailed by 21–18. Then, in the last few minutes, the eleven from Annapolis, coached by Capt. Tom Hamilton, a brilliant war leader, marched 64 yd. to Army's 3-yd. mark.

The Philadelphia Municipal stadium was in a wild uproar of excitement. It was first down and three yd. to go, with a minute and a half of play remaining. Nothing, it seemed, could save Army. The great West Point eleven was on the verge of defeat in the game that marked the end of the college careers for nine of its regulars, including Blanchard, Davis and Tucker.

But Navy failed to carry the ball across. Its first two rushes failed to gain an inch. It then suffered a five-yd. penalty for taking extra time out to make substitutions. On third down the carrier was stopped at the five-yd. line. Before another play could be run the game was over. A substitute had been sent out to stop the clock a few seconds before the end, but the officials did not see him and even had they stopped the clock there was not time enough left to put the ball in play again.

Army won and so completed its 3-year record without defeat, with 27 victories and 1 tie. But it had been outplayed so clearly for most of the second half that its prestige took a fall. Notre Dame, on the same day, was crushing Southern California, to end its season with a perfect record except for its tie with Army, and in the final nation-wide poll was voted the number one team.

Frank Leahy led the Fighting Irish to the top. Johnny



University of Georgia player driving for a touchdown against Tulsa university in 1946 at Houston, Texas. Georgia won, 20–6

Lujack, quarterback in the second half of the 1943 season after Bertelli joined the marines, was also back, to give the team brilliant direction and passing.

Georgia and U.C.L.A. were the only other major elevens, besides Army and Notre Dame, that went through the season without defeat, winning all of their games to rank third and fourth. After them came Illinois, Big Nine champion for the first time after 1928; Michigan, Tennessee, Louisiana State and Rice. Yale had its strongest team in years, though beaten once and tied once.

Alabama, rated the best in the country by many at the start of the season, lost four games. Texas was fancied to have the finest squad in its history but was toppled by Rice and again by Texas Christian to ruin the farewell season of its retiring coach, Dana X. Bible. One of the most surprising decisions was the defeat of Pennsylvania by Princeton.

An interesting development of 1946 was the agreement made between the Western and Pacific Coast conferences to meet in the Rose bowl for three years and possibly longer. Illinois was named by the Big Nine for the 1947 game at Pasadena and U.C.L.A. was selected as the host eleven after defeating Southern California. Georgia and North Carolina, champions of the Southeastern and Southern conferences, were picked for the Sugar bowl.

The Professionals.—Professional football, which had struggled for years to keep its head above water, found the road to prosperity in the middle '30s and from there on it won a larger and larger following. The adoption of a draft system in 1936 was a big step towards solvency, helping to strengthen the weaker clubs and make for more interest throughout the National Football league. The policy of abstaining from signing college players to contracts until their class had graduated also was an important step in the right direction, winning respect for the league's business practices and breaking down some of the opposition to professional football in the colleges.

The value of franchises increased and by 1940 the mem-

bership fee had increased to \$50,000. In 1941, professional football took another important step in winning public confidence. It engaged Elmer Layden, head football coach at Notre Dame, to serve as commissioner and supervise the conduct of its affairs, as Judge Kenesaw Mountain Landis and then Sen. Albert B. Chandler watched over organized baseball.

The biggest name players in college football were attracted into the professional ranks through the payment of salaries that would have been thought fabulous in the early days. Byron "Whizzer" White was paid \$15,000 for a single season of 4 months. Sid Luckman, Sammy Baugh, Bill Dudley, Steve Van Buren, Norman Standlee, Gil Bouley and others were signed up at fancy figures.

The biggest money-makers in the league were the Chicago Bears, the New York Giants, the Washington Redskins, who were transferred from Boston in 1937, and the Green Bay Packers. The rivalry between the Bears and the Packers in the Western division and between the Giants and the Redskins in the east was built up in the public mind to the importance of the traditional "classics" of college football.

As receipts mounted and a following was established, professional football attracted more and more big-name coaches from the colleges. These included Jock Sutherland, Jimmy Conzelman, Earl (Greasy) Neale, Adam Walsh, Gus Dorais, Hunk Anderson, Herb Kopf, Bud De Grott and Clark Shaughnessy.

During World War II, the teams were hard hit by the loss of their players to the service. They had a more difficult problem than did the colleges for the reason that there were no navy trainees to fill the gaps. Nevertheless, they managed to carry on, signing players who had seen their best years and were not called up in the draft. While the quality of the football deteriorated, the public did not lose its interest in the professional game, and big

crowds continued to come out. Transportation stringencies and gas rationing were not the problem they were for the colleges, for most of the league teams were in large centres of population and the parks could be reached by subway, buses and trolleys.

New Conference.—Professional football was so heavily patronized during the war that plans were made for organizing three new leagues. Only one of these materialized. A stadium in New York was a prerequisite to success, and the All-America conference was the new group that succeeded in putting a team into Gotham.

The All-America conference won out when it secured the Yankee stadium in New York. The owner of the Brooklyn Tigers of the National league, which had been merged with the Boston Yanks for the 1945 season, desired to put his team in the Yankee stadium in 1946. The ownership of the New York Giants refused to permit invasion of its territory by a second team in New York, whereupon the Brooklyn Tigers left the old league and came into the new loop under the name of the New York Yankees. Since the owner of the Tigers was part owner of the New York Yankees baseball club, he had no problem in finding a stadium for his football team.

James H. Crowley, former coach at Fordham and a member of the Four Horsemen team at Notre Dame with Layden, was named commissioner of the All-America conference. Layden retired to go into business and Bert Bell of Philadelphia succeeded him as commissioner of the National league.

The old and the new loop immediately began competition for the public's patronage, particularly in New York, Chicago and Los Angeles, where each had a team. The National league transferred its champion Cleveland Rams to Los Angeles to fight the All-America there. The new loop put a team in Cleveland and it proved to be the big money-maker of its group, attracting the biggest crowds in professional football.

The other teams in the All-America did not fare nearly so well. The Yankees drew good crowds, but their overhead was so high that little if any profit was expected to result from the first year's operations. The Giants' followers backed them in greater numbers than before and most of the teams in the old loop played to bigger crowds than their rivals. But all of the teams were feeling the burden of the heavy pay rolls. In the competition for players and with the new circuit raiding the ranks of the old, salaries were raised to attract or to hold the stars. It was a profitable year for the players.

Notable Pro Teams.—Taking the seasons chronologically, 1937 was the best year the National league had known in its history. Sammy Baugh, the greatest passer developed in the southwest, led the Redskins to the championship in their first year in Washington. They defeated the Giants to win the Eastern title and then won from the Bears in the East-West play-off.

In 1938, the largest professional crowd since Red Grange's debut in New York in 1925 saw the Giants defeat the Redskins for the Eastern championship. In the playoff they won from the Green Bay Packers. The following year, Green Bay turned the tables on New York to win the championship.

In 1940, one of the most celebrated games in professional history took place. The Chicago Bears, using their new T formation and with Sid Luckman at quarterback, massacred the Redskins by 73-0 to win the championship. That year Davy O'Brien, playing with the Philadelphia Eagles, set a record with 33 completed passes against the Redskins. Sutherland made his bow as the coach of the Brooklyn

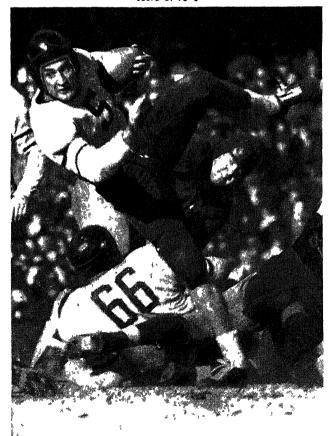
Dodgers and 55,000 saw them defeat the Giants.

The following year the Bears, now the scourge of professional football, defeated the Giants in the play-off, 37–9. In 1942 the great Bears, winners of 18 games in succession, crashed in defeat. The Redskins toppled them by 14–6, Baugh's brilliant passing and the strong Washington line proving too much for the Chicago team.

In 1943 the Cleveland Rams dropped out of competition as the owners went into service, along with many of the players. It was a year of scrambled results, with most of the teams weakened by losses, but attendance was up 36%. Luckman and Baugh and Don Hutson, Green Bay's great pass-catching end, were the big attractions. The Bears regained the championship by defeating the Redskins, 41–21. Luckman, preparatory to going into the merchant marine, set a play-off record by throwing five touchdown passes.

Weakened by the departure of their stars into the armed forces, the Bears yielded supremacy to the Packers in 1944. The Giants were the surprise of the east under coach Steve Owen but were beaten by the Packers in the play-off. Attendance marks were broken in 1945, the best year on record for the Giants. The Redskins played to capacity crowds regularly at home, and in the play-off at Cleveland between the Rams and the Redskins, a new mark for gross receipts was set. The Rams, coached by Adam Walsh and with a new star in Bob Waterfield, from U.C.L.A., won the championship by 15–14.

Chicago Bears' back, George McAfee, evading tacklers for a 7-yd. gain during the game for the national professional football title in which the Bears beat the Washington Redskins by the sensational score of 73-0





San Francisco halfback, Don Durban, stiff-arming opposition for a 6-yd. gain against the Chicago Rockets, Sept. 29, 1946. The Forty-Niners took second place in the western division of the All-America conference as the 8-club league ended its first season

In 1946, the National league enjoyed the same record prosperity that the college game did. The All-America conference did not fare so well, with the exception of the Cleveland Browns, who were coached by Paul Brown, formerly of Ohio State before going into the navy.

The Bears won the honours in the Western division of the National league and the Giants came out on top in the east. In the championship play-off at New York the Bears defeated the Giants 24–14 in a contest marked by disclosure of an attempt to persuade certain Giants to "throw" the game. In the All-America conference the New York Yankees won in the east and the Cleveland Browns ran away with the race in the west. In the play-off for the league championship, the Browns won, 14–9.

Outstanding professional players during the ten-year period included Don Hutson, Sammy Baugh, Sid Luckman, Mel Hein, Bill Osmanski, Bill Dudley, Norman Standlee, Andy Farkas, Danny Fortmann, Cecil Isbell, Ward Cuff, Jack Manders, Dutch Clark, Ed Danowski, Parker Hall, Ken Strong, Clyde Turner, Ed Stydahar, Cliff Battles, Clark Hinkle, Ed Widseth, Ace Parker, Beattie Feathers, Davy O'Brien, Tuffy Leemans, Dick Farman, Len Yonce, Eddie Rucinski, Riley Matheson, Bruiser Kinard, Whizzer White, Turk Edwards, George McAfee, Perry Schwartz, Wee Willie Wilkin, Bernie Masterson, Gary Famiglietti, Lee Artoe, Al Blozis, Tony Canadeo, Joe Aguirre, Al Wis-

tert, Ralph Kercheval, Glenn Presnell, Arnie Herber, George Musso, Gaynell Tinsley, Frank Sinkwich, Steve Van Buren, Bob Waterfield, Bill Paschal, Glenn Dobbs, Paul Governali, Angelo Bertelli.

Canadian Football.—Football in Canada, similar to the game played in the United States but not permitting downfield blocking, was increasing in popularity prior to the outbreak of World War II. The sport carried on during the war years, under restrictions, and there were many service teams.

The Toronto Argonauts and the Winnipeg Blue Bombers were the outstanding teams prior to 1940. The Argonauts won the Grey cup and the dominion championship in 1937, when they defeated the Bombers on Selkirk's field goal. The following year, in the most thrilling football spectacle seen in the dominion up to that time, the Argonauts repeated their victory for the title. Led by the brilliant running of Buster Storey, they defeated the Bombers, 30–7. Winnipeg and the Ottawa Rough Riders came through to the East-West play-off in 1939. Fritz Hanson, a shifty runner of unusual cleverness, and a strong line brought the Bombers out on top by the close score of 8–7. The blocking and tackling in this game were called the best seen in the east.

In 1940 intercollegiate play was abandoned owing to the war, but the game continued to go on. Because of the failure of the Western representatives to conform to the rule of the Canadian Rugby union regarding the use of interference, the East-West play-off was not held. The

Ottawa Rough Riders defeated Toronto Balmy Beach to win the C.R.U. championship.

In 1941, with intercollegiate football still under restrictions, the game continued to have a large following. The East-West match for the Grey cup was resumed. A change in rules permitted linemen to block five yd. ahead of the line of scrimmage and backs one yd. ahead, as compared with three yd. for linemen and one yd. behind the line for backs under the old rule. The rule permitting forward passing from any point behind the line, in use in western Canada, was accepted by the Canadian Rugby union. The Winnipeg Blue Bombers defeated the Ottawa Rough Riders, 18–16, before 20,000 at Toronto for the national championship.

In 1942, 1943 and 1944 football had a decided military tinge in the dominion. The royal Canadian air force furnished most of the personnel for the best teams. In 1942 the Toronto R.C.A.F. Hurricanes defeated the Winnipeg R.C.A.F. Bombers, 8 to 5, for the Grey cup and the championship. In 1943 all branches of the service had teams. The Hamilton Flying Wildcats defeated the Winnipeg R.C.A.F. Bombers, 23–14, for the championship. Joe Krol was the star of the Wildcats, who had nine or ten air force men on their side.

It was not possible to hold the East-West play-off in 1944 because of war conditions. Two eastern teams met for the Grey cup. The Montreal Navy defeated the Hamilton Wildcats, 7–6. It was the first time Quebec had won the dominion title since 1931. In 1945 football returned to nearly the level of prewar days, and the East-West play-off was resumed. The Toronto Argonauts defeated the Winnipeg Blue Bombers for the Grey cup by the score of 35–0.

In 1946, the Argonauts again won the cup, defeating Winnipeg, 28-6. (A. DA.)

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Great Britain.—In 1937 England won the international Rugby union championship; both the home matches were won by a single point, and the only really clear-cut victory was at Edinburgh, where England beat Scotland by two tries to a penalty goal. This was the first time England had ever won at Murrayfield, although Scotland had been playing there since 1925. The South African athlete, H. G. Owen Smith, captained England from the fullback position. H. S. Sever scored a sensational try that helped to beat Ireland at Twickenham. W. R. Logan captained Scotland, E. C. Davey Wales, and G. L. Morgan Ireland.

The year 1938 saw a marked improvement in the standard of football, and Scotland won the championship. With R. Wilson Shaw as captain, the side opened with an extremely lucky win against Wales at Murrayfield, the scores being a goal and a penalty goal to two tries. They won at home against Ireland by 23 points to 14, and beat England at Twickenham by the unusual score of 2 penalty goals and 5 tries (21 points) to a dropped goal, 3 penalty goals and 1 try (16 points). Clifford Jones was now captain of Wales, Peter Cranmer of England, and Morgan again of Ireland.

The standard of Rugby union football in 1939 again fell

back; England, Wales and Ireland divided the honours, and Scotland lost every match. In 1938, a British side, under the captaincy of Sam Walker (Ireland), had toured South Africa where they won only one of the three tests. An Australian side landed in England at the end of Aug. 1939 for a tour in the four countries, only to be dispersed when World War II broke out. In the three seasons before the war Cambridge had won two of the three university matches; the royal navy had won the interservices tournament twice; the county championship was won by Gloucestershire, Lancashire and Warwickshire (for the first time) successively; St. Mary's hospital won the hospital cup every year.

World War II took heavy toll of Rugby union men, among them H. Rew (England), W. G. E. Luddington (England), C. F. Halloran (Ireland), D. E. Teden (England), E. W. de Vere Hunt (Ireland), J. G. S. Forrest (Scotland), D. St. Clair Ford (Scotland), J. R. Evans (Wales) and T. F. Dorwood (Scotland). At home the services, including the civil defense, kept the game going, and all over the country some rugby football, even in the London area and at the universities and hospitals, could be seen. In the first season after the war, interest was added to the game by the tour of a New Zealand side, the "Kiwis." They played excellent football and were beaten only three times. The countries all played one another again, most of them twice to make up for lost time; but there was no championship concerned, and no caps were given. Scotland was easily the best side, and also had the honour of beating the Kiwis. Cambridge won the university match in 1945 and Oxford in 1946. St. Mary's continued to win the hospital cup, and the army won the interservices tournament. Among the prewar internationals in the game again were J. Heaton (England), R. H. Guest (England), J. R. S. Innes (Scotland), C. J. Murphy (Ireland), F. G. Moran (Ireland), Hayden Tanner (Wales) and L. Manfield (Wales).

Rugby League Football.—The league celebrated its jubilee in 1945, for it was in 1895 that the "Northern union" (as it was first called) broke away from the Rugby union on the question of payment for "broken time." An Australian side visited England in 1937, and lost the test series to England, which won two of the three matches. The leading club during the three prewar years was Salford. In the Club championships they won the Rugby league cup in 1937 and 1939, and in the Challenge cup competition they won the cup in 1939 and were the losing finalists to Halifax in 1939. The whole side was well balanced and played excellent football, though they failed badly on their second visit to Wembley in 1939, when Halifax won by 20 points to 3.

Many clubs closed down during World War II, but the Challenge cup competition continued. Leeds won it in 1941 and 1942, Dewsbury in 1943, Bradford Northern narrowly against Wigan in 1944, and Huddersfield equally narrowly against Bradford Northern in 1945. All this time, in services football (which formed the bulk of the national football), Rugby league players and Rugby union players all played together.

After the 1945-46 season had ended, with Wigan winning the Rugby league championship and Wakefield Trinity beating Wigan in the Challenge cup competition with its final at Wembley by 13 points to 12 (the finest of all the finals seen at Wembley), a representative side, captained by A. J. Risman, went out to Australia. It broke all financial records, and the takings at the first test (at Sydney) were more than £10,000. This particular test was

388 drawn, but both the others were won fairly easily by England.

Association Football.—In 1937, Sunderland won the Football Association cup for the first time, and by the end of that year W. R. Dean, the old Everton centre-forward, had scored 375 goals in league football, beating Steve Bloomer's 1914 record of 352. Wales won the international championship, winning all three matches. The England v. Scotland game was played at Glasgow, and the visitors won it brilliantly by 3–1. At the end of this season the Arsenal broke all records for a transfer fee by paying Wolverhampton Wanderers £14,000 for the services of Bryn Jones; fees of £10,000 for a player were not uncommon at that time. Celtic won the Scottish cup, Belfast Celtic the Irish cup and Crewe Alexandra the Welsh cup.

In 1938, Preston North End won the cup, after having been beaten in the final the year before by Sunderland. In Scotland, for the first time in the history of the competition, the cup was won by a second division side (East Fife). To mark the jubilee (1888-1938) of the Football league, a banquet was held in London, the guests including the duke of Gloucester and Lord Derby. Some of the outstanding players at this time were S. Matthews, the Stoke City outside-right, S. Cullis, the Wolverhampton centre-half, and A. Massie (Heart of Midlothian). In 1938 the game drew in bigger crowds than ever. Portsmouth won the cup for the first time, beating Wolverhampton Wanderers; Clyde, the Scottish cup; and Bishop Auckland, the amateur cup. Interest in Association football had become widespread, and international matches were played against Norway, Italy, Yugoslavia, Rumania, France, Hungary, Switzerland, Poland and Germany.

Most of the competitions were carried on during World War II in modified forms. The outstanding event of 1945 was the visit of the Russian team, Moscow Dynamo, which attracted tremendous crowds at Chelsea, Cardiff, Glasgow and Highbury (against the Arsenal). They won two matches and drew the other two, impressing everybody by their attacking skill and physical fitness.

The year 1946 began with a great tragedy: in a cup-tie at Bolton (against Stoke City) one of the stands collapsed; 33 spectators were killed and more than 500 others injured. Later in the year, Derby county won the cup with two great players in P. Doherty and H. Carter. Scotland was the best international side, and France beat England in Paris by two goals to one. Visiting teams from Sweden and Denmark in the autumn showed impressive form against English professional clubs. Never were there such crowds at matches, and the players began to agitate for greater remuneration for their services, a strike being threatened more than once.

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(D. R. G.)

Foot Racing

See TRACK AND FIELD SPORTS.

Foreign Economic Administration

See WAR AND DEFENSE AGENCIES.

Foreign Exchange

See Exchange Control and Exchange Rates.

Foreign Funds Control

See WAR AND DEFENSE AGENCIES.

Foreign Investments in the United States

By 1937 the value of foreign investments in the United States had already begun to reflect the uneasiness with which holders of these investments viewed the increasing military growth of the fascist powers. The movement of foreign funds to and from the United States after 1929 (mainly from the United States) had been associated, until about 1935, with factors primarily regarded as economic, e.g., the depression and the coincidental devaluation of currencies and the need by foreigners for dollars with which to meet obligations in the United States. When Benito Mussolini sent his armies across the Mediterranean to seize Ethiopian territory in 1985, investors and others began to fear the consequences of an embroilment of nations. An influx of funds into the United States which lasted through the next decade ensued, precipitated by this event and by later evidence of political instability.

The other factors making for movements of capital were, of course, still present and powerful, but the desire for safety and mobility of principal agitated a tremendous movement of funds into the United States that would probably not have occurred if nazi power politics had not been unleashed. One financial measure of the impact of axis activities in the middle thirties-the Ethiopian invasion, the rearming of Germany, the Japanese invasion of China and the fascist-sponsored rebellion in Spain-was an unusually large inflow of foreign funds into the United States seeking haven, during the three-year period 1935 through 1937. This totalled \$1,168,500,000 of liquid (shortterm) funds; in addition, \$1,162,000,000 of U.S. securities were purchased. The movement contributed to raising the value of foreign investments in the United States to about \$9,500,000,000 at the end of 1937.

From 1937 to the beginning of World War II the value of foreign-owned investments in the United States continued to increase. With each new act of axis aggression, a wave of foreign capital reached the United States. However, the movements were sometimes obscured by the balance-of-payments position of that country which required large payments by the rest of the world and by political and economic factors unrelated to axis activities. For example, German-stimulated tension over the Sudeten areas of Czechoslovakia which had grown intense during late July, 1938, increased during September; during the week of Sept. 14, the week of the Nuernberg congress of the nazi party, banks in the United States reported an increase of \$145,000,000 in foreign accounts with them. In the following week the inflow was \$121,000,000.

On the other hand, a similar inflow was not recorded in March of the same year, when Germany invaded and annexed Austria. The movement of funds to the United States that undoubtedly took place at that time was overshadowed in the recorded statistics of capital movements by the purchase during the first six months of 1938 by the rest of the world, of about \$630,000,000 more of merchandise from the United States than the United States purchased from other countries. To pay this sum, foreigners drew on their short-term funds in the United States. Thus their aggregate U.S. investments declined despite the movement of funds to that country from Europe.

However, in the recurring periods of crises that followed, large sums flowed to the United States; \$450,000,000 during the seven-week period beginning with the German invasion of Czechoslovakia in March 1939, and another \$270,000,000 during August of that year, when Germany created the Polish crisis. In addition, foreign governments

and foreign central banks placed \$534,000,000 of gold under the protective custody of the federal reserve banks in the United States during 1939 and an equal sum in the two preceding years. In a technical sense this gold was not regarded as an investment in the latter country, although such gold was readily convertible to investments.

Liquidation of British Assets.—At the outbreak of World War II the combined investments (long-term and shortterm) in the United States of the three principal axis partners was about \$500,000,000. British, Canadian and French investments in the same country were about eight times as large, and five-eighths of these were British. Unprepared as they were for the type of war that was to follow, the countries that opposed the axis in 1939 began to mobilize their resources in foreign countries, particularly in the United States. They hoped to liquidate those at high prices and use the proceeds for the purchase of foreign war matériel and food. On Aug. 27, 1939, the British government banned the sale of certain foreign securities, including those payable in dollars, and ordered all investors to report their holdings to the Bank of England. The French government also required investors to report their holdings, and both governments instituted control over all exchange operations. In the same month Canada and other parts of the British empire adopted similar measures.

During World War I the British had permitted largescale liquidations of U.S. securities by investors, and as a consequence these securities were liquidated at low values. During World War II the disposal of British assets was more carefully planned. In order to preserve the flow of income from overseas assets as long as possible, the British disposed of the bulk of their holdings of gold and shortterm balances and then began to liquidate their holdings of readily marketable securities, intending to retain the most profitable for the last.

In five vesting orders between Feb. 1940 and April 1941, the British government obtained its nationals' holdings of 484 issues of U.S. securities. The ownership of these stocks and bonds had not involved any control in the companies which had issued them. The British treasury proceeded to sell these in New York through underwriting syndicates which offered blocks of issues listed on the New York stock exchange "off the market" after the close of regular trading hours on that exchange. In this manner large volumes of securities were sold at prevailing prices without depressing the market. Blocks small enough to be sold on the floor of the exchange without any appreciable effect on prices were sold in that manner. From the beginning of the war until Aug. 1941 the value of these (and other U.S.) securities sold, mainly in this fashion, totalled \$623,000,000.

In March 1941, the British government took its first step toward disposing of its choice foreign investments—companies controlled in England—when it arranged for the sale of the American Viscose corporation, at a substantial loss. The British received about \$55,000,000 for a company whose net worth probably exceeded \$100,000,000. To avoid a similar experience, the Brown and Williamson Tobacco company, also British-controlled, borrowed funds from the Reconstruction Finance corporation in the United States and used most of the proceeds to pay off indebtedness to its British parent company and to purchase its own preferred shares and securities of affiliated companies from its parent. In this manner, the British parent realized \$25,000,000, while still retaining control of the U.S. company.

Passage of the American Lend-Lease act on March 11, 1941, relieved the British government of the necessity for hurried liquidation of assets in the United States, although

there was a pressing need for funds to meet commitments made to that date and to purchase supplies in third countries. This burden was eased when the Reconstruction Finance corporation announced in July 1941 that it had granted a loan of up to \$425,000,000 to the English, with U.S. securities as collateral. The collateral, valued roughly at \$700,000,000, was comprised of a portion of the vested securities referred to above, and to securities of Britishcontrolled companies in the United States which the British government had borrowed from their owners. Indicative of the extent to which the British government had been using their foreign assets was the fact that, in addition to goods purchased and shipped from the United States, the United Kingdom had made advance payments on orders for future delivery and provided capital assistance to U.S. producers to the extent of about \$850,000,-000 by mid-June 1941.

Control of Foreign Funds.—When national socialism came to power in Germany, fanatic yet competent men gained the power to develop international finance as a subtle and secret weapon with which to weaken intended national victims before the involvement of armed forces. The United States treasury department countered this aggressive use of financial policy through domestic financial control, including control over foreign funds in the United States; first for their protection (April 10, 1940 to June 14, 1941), later for national defense (June 14 to Dec. 8, 1941), thereafter as part of economic warfare.

Over a period of years an international faith had developed in the integrity of the United States government and a belief that it would protect alien property lawfully within its jurisdiction. The country therefore had become a storehouse of treasure for the world. Full use by the axis of its credits within the United States would have made a substantial contribution to the cause of the invaders. This would have placed the United States in the position of being the financial medium through which goods and services might be supplied the axis powers, notwithstanding the provisions of the U.S. Neutrality act of 1939, which forbade direct trading with belligerents.

Axis control of assets in the United States became a subject of official U.S. concern with the outbreak of World War II. The invasion of Norway and Denmark provoked the immediate freezing of their funds in the U.S. The issuance of a series of exécutive orders in 1940 and 1941 immobilizing the assets in the United States of the axis countries and of those countries overrun by the axis (and the granting of licences to friendly and neutral countries to engage in financial transactions in the U.S.) served to lessen greatly the turnover of certain foreign capital in the United States. Initially, freezing the funds of the victims of aggression was in effect formal notice to the aggressors that any attempt to secure control of the dollar assets of invaded countries or of their nationals by duress would be blocked by official action. Subsequently, the freezing of axis funds in June and July 1941 and the requirement that all foreign assets in the United States be registered as of June 1, 1940, and June 14, 1941, laid the basis for an effective machinery with which to control foreign funds.

The situation at that time required a comprehensive survey to determine the value of all foreign property existing in the United States. Executive order 8389 required the value of property and the identity of persons holding property to be reported to the treasury department. Almost 600,000 reports filed by individuals and institutions in the United States included information on securi-

ties, bank accounts, safe deposit boxes and an innumerable variety of other assets (see Table I).

Prior to the attack on the United States on Dec. 7, 1941, Japan, Germany and Italy had sharply reduced their investments in that country. During this period several agencies of the United States government had certain axis properties under surveillance. The management of a number of these properties was subsequently placed in the hands of persons acceptable to the treasury department, and a number of companies whose products or services were not essential were liquidated. The identification of other funds or property controlled by nationals of aggressor states directly or through custodial or nominee ownership made possible by the registration of June 14, 1941, and by official records facilitated the ousting of axis control from a number of important U.S. enterprises producing materials vital to the prosecution of the war.

The administration of controls over foreign property in the United States from 1940 through 1945 was in general focused on axis and axis-controlled properties and the property of neutrals whose relations to the axis were suspect. Legislation and executive orders gave the treasury department and the alien property custodian primary responsibility for the control of these properties. The treasury's general jurisdiction until June 1945 covered: (1) Dollar balances, bullion and securities of governments or nationals, except those of businesses under the jurisdiction of the alien property custodian; (2) all property of the occupied countries and their nationals except those particular business enterprises where the alien property custodian determined that it was in the national interest that he assume control; and (3) all transactions or business dealings with countries blocked under freezing orders, including the control of trade and commercial communications with the axis and axis-controlled countries.

The alien property custodian, in general, had jurisdiction of the following during this period: (1) Axis-owned or axis-controlled business enterprises, whether controlled directly, through neutrals or by virtue of the occupation of invaded countries; this jurisdiction extended to the dollar balances and other assets of such businesses; (2) All other types of axis property, except dollar balances, bullion and securities; these included estates, trusts, properties in receivership proceedings, real estate, mortgages, personal property, etc.; (3) All foreign-owned patents, copyrights, trademarks and ships; and (4) Interests in other business enterprises of all foreign nationals when the custodian certified to the secretary of the treasury that it was in the national interest for him to assume control.

The Office of Alien Property Custodian and the treasury at that time strove toward three main objectives. First of these objectives was the complete severance of all financial and commercial intercourse, trade and communication, direct and indirect, between the United States and other American republics on the one hand, and axis or axisdominated countries on the other. The second was control over potentially dangerous use of axis property:

- 1. Use of assets to finance propaganda, espionage and sabotage in the United States or in other United Nations countries.
- 2. Acquisition of stocks of strategic materials in United Nations and neutral countries even though such materials were of no direct use to the enemy, but were diverted from the war effort of the United States.
- 3. Management of plant and equipment either through failure to convert to wartime production or through less than full utilization with the specific objective of retarding maximum wartime production.
- 4. Mismanagement of properties and goods by permitting them to deteriorate.
- 5. Limitations on the use of important techniques and processes through the control of patents, patent applications and copyrights.

Table I.—Estimated Value of Foreign-Owned United States Assets, by Countries and by Types, June 14, 1941 (In millions of dollars)

Country and area	Bullion,* currency and deposits	Domestic securities	Real property	Interests in estates and trusts	Foreign- controlled † enterprises	Other assets	Total
North America:							
Canada	424.2	530.9	16.5	34.5	518.5	184.5	1,709.2
French North America	#	‡		••••	İ	t	1,707.2
Newfoundland	5.7	11.9		• • • •	11.3	4.7	33.6
Total, North America	429.9	542.9	16.5	34.5	529.8	189.2	1,742.8
South America:							.,,
Argentina	119.7	51.4	.5	3.1	19.7	39.0	233.4
Bolivia	8.9	2.4	. ‡	#	14.2	3.3	28.8
Brazil	60.6	13.6	0.2	2.8	1.3	55.6	134.1
British Guiana	0.2	0.1	, Į	<u> ‡</u>	• • • •	0.4	0.7
Colombia	35.6 26.2	10.2	0.1	1.3	8.0	20.8	76.0
Ecuador	2.9	2.9	0.2	0.2	0.5	14.1	44.1
French Guiana	0.1	0.6	0.1	‡	0.2	1.4	5.2
Paraguay	0.3	0.1	• • • • • •	*****	*****	0.1	0.2
Peru	12.9	7.9	0.1	0.7	•••••	2.1	2.5
Surinam (Netherlands Guiana)	1.6	0.1			0.8	12.6	35.0
Uruguay	7.2	3.8	*****	0.2	14.7	2.3 3.5	4.0
Venezuela	28.7	7.0	0.1	0.6	1.9	3.5 41.0	29.4
That Count A					-	41.0	79.3
Total, South America	304.7	100.1	1.3	9.2	61.4	196.2	672.9
Central America and Mexico:							
British Honduras	0.2	1.2					
Costa Rica	4.1	1.0	0.5	*****	*****	0.1	1.5
Guatemala	10.7	2.0	0.5	0.1	Ţ	0.9	6.6
Honduras	3.2	2.8	‡	1.0 0.1	0.4	1.5	15.6
Nicaragua	3.9	0.2	0.1	0.1 İ	, į	9.1	15.2
Panamá	52.0 '	53.3	5.6	0.1	0.1 28.6	3.3	7.6
El Salvador	5.5	1.7	J.0		28.6 0.4	30.5	170.1
Mexico	73.9	27.6	1.8	8.0	9.4	1.1 39.1	8.7
Total, Central America and Mexico						39.1	159.8
Total, Central America and Mexico	153.4	89.9	8.1	9.4	39.1	85.4	385.3
West Indies and Bermuda:							
Bahamas	1.2	12.5	0.6	5.2	3.4	0.4	20.0
Bermuda	2.3	9.5	0.2	6.2	2.4	9.4 4.2	32.3 24.8
British West Indies, n.e.s.	0. 7	3.9	0.2	2.3	0.2	2.4	24.8 9.7
Cuba	52.9	66.2	0.9	7.4	15.9	28.5	171.8
Dominican Republic	8.4	4.6	0.1	0.1	0.3	10.4	23.9
French West Indies	2.4	0.2			t t	0.3	23.9
Haiti	4.0	1.2	‡	0.4	0.1	1.0	6.7
Netherlands West Indies	21.1	4.5	‡	0.1	••••	8.8	34.3
Total, West Indies and Bermuda	93.0	102.5	2.0	21.		-	-
	. 5.0	102.5	2.0	21.6	22.3	65.0	306.4

(In millions of dollars)

Country and area	Bullion* currency and deposits	Domestic securities	Real property	Interests in estates and trusts	Foreign- controlled † enterprises	Other assets	Total
Europe: Albania Austria Belgium British Mediterranean possessions Bulgaria Czechoslovakia Danzig Denmark Eire Estonia Finland France Germany Greece Hungary Iceland Italya Liethenstein Lithuania Luxembourg Monacc Netherlands Norway Poland Portugal Rumania Spain Sweden Switzerland United Kingdom Yugoslavia United Kingdom Yugoslavia Total, Europe	0.2 0.9 128.1 0.2 0.8 3.2 0.2 16.0 14.7 4.3 8.6 516.4 7.5 34.3 4.1 1.4 23.9 205.4 104.5 23.0 2.9 205.4 104.5 12.8 238.0 494.8 12.8 28.8 28.6 28.4 23.9	1.8 34.9 0.8 0.1 0.8 0.1 0.8 5.3 9.3 1.0 1.6 186.4 12.4 3.9 1.4 33.0 0.1 0.8 0.2 3.5 4.7 319.8 11.3 11.3 11.3 15.4 35.9 417.2 0.2 587.5 1.0 1,697.1	0.5 0.5 0.3 0.3 1.1 0.1 10 0 4.8 0.8 0.1 1.2 0.9 1.2 0.3 0.1 0.4 0.9 1.2 0.3 0.1 0.4 0.8 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1	1.3 6.2 0.1 0.2 0.9 1.8 3.8 13.1 1.0 2.1 2.1 1.3 0.3 0.1 1.3 0.2 0.3 0.1 5.4 13.1 3.0 2.1 2.5 0.4 62.4 0.7 404.3 0.7 757.6	1.2 82.9 2.2 2.2 3.8 99.6 105.1 4.5 0.1 10.0 \$\$ 5.1 0.8 5.1 0.7 0.3 336.0 5.0 0.7 0.3 0.1 4.37.8 9.4 137.8 9.4 711.5 0.9	0.1 0.7 60.1 0.5 2.0 16.0 3.0 7.0 105.9 10.0 24.1 2.9 0.2 0.2 0.2 0.2 0.2 1.7 1.5 10.1 30.6 1.7 1.9 5.4 5.2 9.0 5.4 5.2 9.0 5.2 9.0 1.7 1.9 5.2 9.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5	0.3 6.0 312.7 1.9 1.6 9.4 0.2 48.1 45.0 10.6 10.6 9.7 9.9 2.0 129.6 2.3 3.4 15.5 198.7 19.5 2.3 3.4 15.5 198.3 36.2 2.1 10.6 28.1 3.238.9 37.1 8,127.6
Africa: Algeria Belgian Africa British East Africa British South Africa. (excl. of Union of South Africa) British West Africa Egypt Ethiopia French Africa, n.e.s. French Morocco French West Africa Italian Africa Liberia Portuguese Africa Spanish Africa Tangier Tunisia Union of South Africa Total, Africa	0.4 20.9 0.3 0.3 0.1 8.4 \$\frac{1}{2}\$ 0.9 4.1 1.2 \$\frac{1}{2}\$ 0.3 0.7 0.4 6.0 0.5 20.7 65.4	0.2 0.4 0.8 0.5 0.1 5.8 	0.1 0.1 1 0.5 	0.2 0.6 0.5 0.4 4.7 1 0.4 0.1 0.7 0.2 2.1 10.0	0.8 0.4 0.6 2.1 0.3 9.4	0.6 27.6 1.0 0.1 \$ 5.1 1 0.2 0.6 0.1 \$ 0.5 0.2 1.0 0.2 2.2 3 59.8	1.4 49.8 3.2 2.0 0.9 26.6 1.1 5.9 1.3 1.5 0.5 1.5 0.8 9.7 1.0 56.6
Asia: Afghanistan	1.1 0.1 0.9 19.4 1.8 238.6 22.6 52.8 11.3 14.1 2.3 94.1 95.7 4.4 227.8 	0.1 0.2 1.8 0.8 0.1 53.7 0.2 19.9 4.8 0.1 0.4 11.7 9.9 6.1 18.4 7.1 0.1 6.1 	0.7 0.3 0.5 1.8 0.6 0.8 0.5	0.1 0.1 0.4 1.5 0.7 2.2 0.1 0.7 0.2 0.1 0.7 0.4 1.8 1.9 	1.6.7 16.7 3.9 3.1 0.8 35.1 3.6 0.6 8.0 \$\frac{1}{8}\$ 0.2 0.2 0.2	\$ 0.1 0.2 0.3 13.3 1.4 45.2 \$ 6.7 26.2 3.4 49.1 2.0 19.9 \$ 1.1 3.0 	6.4 0.4 0.3 1.5 36.5 3.3 356.4 25.0 84.3 48.1 18.5 160.5 158.7 15.5 276.8 11.9 8.2 40.0 0.2
Oceania: Australia British Oceania French Oceania New Zealand Total, Oceania Unknown Grand total	27.2 0.1 1.4 5.3 34.0 1.1 4,248.8	6.7 0.5 0.5 7.8 1.8 2,699.1	0.4 ‡ ‡ † 0.5 1.2 124.8	2.2 0.7 0.6 3.5 8.9 867.3	2.9 	15.1 0.2 1.8 17.1 1.0 2,486.1	54.5 0.1 2.8 10.6 68.2 15.7

^{*}Excluding gold held under earmark for foreign account by the Federal Reserve Bank of New York, which amounted to \$1,916,000,000.

[†]Control was determined on the basis of the ownership of 25% or more of the voting stock of corporations and analogous interests in partnerships and other organizations, ‡Less than \$50,000.

[§]Included in the totals.

^{||}Taxes, amounting to about \$37,850,000, collected under section 503 of the Sugar Act of 1937, to be made available for public relief and civilian defense in the Philippine Islands, are not included in this figure.

Note.—The figures are rounded and will not necessarily add to the totals.

Source: Census of Foreign-Owned Assets in the United States, U.S. Treasury Department, 1945.

The third objective was to promote the war effort of the United States by making available axis-controlled productive enterprises.

The first of these objectives was aided by the treasury's procedure of licensing foreign transactions in the United States, a system of export control, and the publication of a list of persons and enterprises in Latin America and in the eastern hemisphere who were friendly to the axis. This list, known as "The Proclaimed List of Certain Blocked Nationals," contained more than 14,500 names as of Jan. 1945, and served the other American republics in controlling anti-United Nations activities.

The treasury operated through its foreign funds control division, which during World War II placed the following areas under its jurisdiction and prohibited all transactions involving them except as authorized by the secretary of the treasury: continental Europe (except Turkey), Japan, Japanese-occupied areas and China. This type of control was extended to individuals and firms in the American republics and elsewhere who co-operated with the axis. The program was essentially one of regulating the use and disposition of property in which a blocked country or national had an interest. This control was exercised through the prohibition of all transactions involving such property and the subsequent issuance of licences authorizing specific transactions and, in certain instances, broad groups of transactions. The system of control was applied to business enterprises as well as to liquid assets. Freezing controls affected about \$6,000,000,-000 of the \$12,700,000,000 of foreign-owned assets.

To obtain their objectives the treasury and the alien property custodian also took control over a number of axis properties in the United States. Both agencies were reported to have liquidated more than 500 enterprises by May 1943 and were in the process of liquidating others. It had previously been determined that these were nonessential to the war effort and that the national interest would best be served by making their productive assets and labour available to other producers. The shares of a number of concerns important to U.S. war production were vested (the outright transfer of title to property from the foreign owner to the custodian). The custodian, where necessary, replaced the management and other personnel by loyal, competent persons.

The alien property custodian issued more than 5,000 vesting orders between March 1942 and July 1945 in pursuance of the objective of control over productive resources formerly controlled by the axis and their exploitation to the full as part of the war effort. Most of the important axis properties in the United States were vested during 1942 and the first half of 1943, so that the number of large properties vested after July 1943 was relatively small in contrast with the earlier period.

As indicated in the custodian's annual report for the year ending June 1945, the assets of vested enterprises, mainly engaged in chemical, financial and wholesale activities, totalled \$371,400,000. The foreign equity in these enterprises ranged from 100% control in some 55% of the 408 enterprises vested to minority interests in only 14%, and aggregated somewhat in excess of \$151,000,000. About half of the enterprises were German and over 40% were Japanese. Geographically the properties were concentrated in the state of New York (mainly German and Italian), while many Japanese properties were located in California. Other property vested to that date also involved proportionately large German industrial interests.

Of the more than 46,000 patents and patent applications vested, almost 30,000 were German-owned. German-owned copyrights, concentrated in scientific and technical works, were a relatively small part of all vested copyrights. The bulk of known French and Italian copyrights were in music

Since several of the governments in exile had (prior to the liberation of their territories) taken steps to control the foreign property of their nationals, the custodian found it desirable to consult with representatives of these governments before taking steps affecting the property of their nationals. Close co-operation remained necessary between the United States and neutral countries on the problem of looted securities. The axis probably had in its control hundreds of million dollars of securities representing investments in the United States which it had seized from foreigners. To prevent axis governments and leaders and their collaborators from retaining their loot under neutral protection, the United States government requested neutral governments in Oct. 1944 to institute controls designed to uncover such property concealed in neutral countries. After June 6, 1940, the importation of securities into the United States from any foreign country was prohibited except on condition that such securities or evidences thereof were immediately delivered for examination to a federal reserve bank or agent for the United States government. The federal reserve banks were to hold these securities until it was determined whether any of the following nations or their nationals had an interest in the securities or evidences thereof: continental Europe, China, Japan, Thailand (Siam), Hong Kong. (The effective dates of the application of the prohibition to individual countries varied from June 1940 to June 1941.) In view of the rigid controls on international movement of funds and securities already existing in Great Britain, Canada, Newfoundland and Bermuda, securities coming from these countries were exempted from the prohibition. Customs officers and postal employees were privileged to inspect articles which they thought might contain securities. Unless the axis was deprived of this loot it seemed desirable to continue a system of control, particularly since most of the obligations were believed to be bearer bonds and required no evidences of ownership or acquisition other than physical possession in order to be sold or be presented for the payment of interest-hence, the need for close working arrangements with neutrals and others.

In June 1945 President Harry S. Truman, in an executive order, authorized the alien property custodian to seize German and Japanese cash, gold and securities in the United States. These assets had been frozen during the war by the treasury's foreign funds control division and, according to press reports, amounted to about \$220,-000,000. The action was interpreted as a step toward the ultimate seizure and distribution of the assets to claimants against both countries. However, the disposition of these funds and the proceeds of the sales by the custodian of axis-controlled enterprises in the United States remained a matter for congressional decision. It was generally recognized that the potential funds available from these sources-roughly \$220,000,000 of short-term assets, gold and securities, and \$235,000,000 of vested properties-would fall far short of meeting merely the claims resulting from damage to U.S. properties in both countries and the losses to U.S. investors in German and Japanese bonds.

Up to Nov. 1945 the custodian had offered for public sale the government's interest in 19 of the 408 business enterprises seized by his office. Among those so offered during 1945 were two former meeting places of the Ger-

man-American bund; one was the well-known Camp Nordland in Andover township, Sussex county, New Jersey. The custodian also took further steps to destroy the corporate structure formerly controlled by the giant German chemical cartel, I. G. Farbenindustrie. The cartel's indirect holdings of the Class B common stock of the Winthrop Chemical company of Delaware, an important manufacturer of chemical products, were sold to the Sterling Drug, Inc., of Delaware, under terms that virtually prevented its return to German control after the war through "fronts," "cloaks" or other devices.

At the time of the transaction the United States attorney general pointed out that after World War I this same property had been sold by the alien property custodian to United States citizens but that it had ultimately found its way back to I. G. Farben interests. To prevent the recurrence of this experience, he had recommended that restrictions be placed on the transfer of title or control of the shares.

The custodian also noted that prior to World War II, axis concealment of the true ownership of some U.S. firms had been exceedingly skilful. Indeed, in one case, it was so successful that the U.S. managers of the American Potash and Chemical corporation apparently had not known that German concerns were the beneficial owners of the company.

The company was an important producer of varieties of potash, chloride, borax and other chemicals used in the manufacture of many military explosives, armour plate, ordnance articles and instrument glass used in bomb-sights and gunnery fire-control devices. In his second report, for the fiscal year ending June 1944 (released in 1945), the custodian noted the following among the contributions to the war effort by firms he was liquidating:

"Among the assets of business enterprises then in liquidation the alien property custodian had discovered a variety of pieces of property which proved to be of direct assistance in the prosecution of the war. The following were examples:

- 1. A scale model of the Fiat plant at Turin, Italy, was found among the records of the Fiat Societa Anomina and turned over to the United States army intelligence service. It was understood that this model was used in plans for bombing the plant, which manufactured aeroplanes for the axis.
- 2. Three large-scale maps showing in minute detail the cities of Osaka, Nagoya and Yokohama, Japan, were found among the property of Japan Products Co., Inc., and turned over to the United States army intelligence service.
- 3. The files of the U.S. branch of the huge Japanese firm of Mitsui & Co., Ltd., contained a large number of books, maps, plans, specifications of machinery, etc. This material was searched by the proper authorities and yielded valuable information.
- 4. The books and pamphlets found in the stock of Gosha-do, a Japanese book store, proved of great value to the war effort. Different items from this collection were used by the Office of War Information, the army, the navy and the Office of Strategic Services.
- 5. Two Japanese typewriters were among the assets of the Pacific Trading company. These typewriters were handed over to the United States army intelligence service and on the day following their receipt they were flown to General Douglas MacArthur's headquarters where they proved most useful."

The treasury department took two important steps during the first ten months of 1945 designed to free friendly funds from its control. The first lifted all liberated areas out of the category of enemy territory and the second, relating solely to France, suggested a pattern that might be applied to the assets of nations of other overrun allied countries. These involved the lifting of the treasury's import and export controls over payments to and from blocked countries, and, in the case of France, released French assets (mainly banking balances, bullion and securities) in the United States from the treasury's jurisdiction. The complete release of the latter, however, was dependent upon certification by the French government that such assets were in fact French-owned, although the United States reserved the right to join in the clearance of individual accounts. The certification requirement provided the French government with an opportunity to check the beneficial ownership of all property and to prevent the release of property which was held in French names but was actually axis-owned. At the time of the announcement the French government expressed the conviction that the treasury's freezing controls had placed a disadvantage on the axis by preventing it from looting these assets while at the same time preserving them for the French people. A defrosting procedure similar to the one relating to French assets was applied to Belgian assets in Nov. 1945.

On Dec. 7, 1945, the treasury announced a sweeping relaxation of freezing control for all countries except Portugal, Spain, Sweden, Switzerland, Liechtenstein, Tangier, Germany and Japan. The people of the United States were permitted by general licence to engage as freely in financial and commercial transactions with persons in the newly unblocked countries as with persons in Great Britain, Canada and other countries of the western hemisphere. However, the then existing blocked accounts of persons within the licensed countries were not freed by this action.

It was further stated that the neutral countries mentioned above would not be accorded the privileges made available to other countries until they had taken effective action to search out, immobilize and control all enemy assets within their jurisdiction, and until a satisfactory solution had been reached concerning the disposition of those axis assets.

Controls over blocked accounts within the generally licensed areas were maintained to insure that camouflaged axis assets were not released.

By June 14, 1946, in addition to the assets of France and Belgium, the assets of Norway, Finland, the Netherlands, Czechoslovakia, Luxembourg and Denmark, in the United States had been unfrozen under a certification procedure similar to that in effect for the aforementioned two countries.

Table II.—Estimated Value of Foreign Investments in the United States, 1937-1946 (Year-end values in millions of dollars)

(**************************************	Dec.	31
Туре	1937	1946
Long-term investments:		
Direct (book value)	2,530	2.800
Common and preferred shares (market value)	2,600	2,800
Corporate bonds (market value)	410	600
U.S. national, state and municipal bonds*	250	300
Interests in estates and trusts	790	700
Other assets, debts, claims, real property, insurance		
policies	820	800
Total long-term investments	7,400	8.000
Short-term investments:		-,
Deposits, checks, notes, acceptances, currency	2,080	7,500
Total long- and short-term investments	9.480	15.500

*Changes in the value of these bonds cannot be separately measured and are included in changes in the value of corporate bonds.

Sources: Data in Census of Foreign-owned Assets in the United States, U.S. treasury department, 1946, adjusted for capital movements figures appearing in the Treasury Bulletin, and estimates of the department of commerce for 1937.

Change in Value, 1937–1946.—The value of foreign investments in the United States increased from \$9,480,000,000 at the end of 1937 to \$15,500,000,000 at the close of 1946, as shown in Table II. The rise, which was most pronounced in short-term investments, reflected increases in the value of the U.S. holdings of most countries. An increase of about 70% in common share prices during the period more than offset liquidations of these securities valued at hundreds of millions of dollars. (See also Exchange Control and Exchange Rates; Investments Abroad, U.S. and British.)

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Foreign Relief and Rehabilitation Operations, Office of

See WAR AND DEFENSE AGENCIES.

Foreign Trade

See Agriculture; International Trade.

Forests

In the years just before World War II, some significant advances occurred in forest conservation and restoration in the United States. All accomplishments, however, failed to reverse the downward trend of the nation's forest resource which had continued for more than a century. Heavy drain on the forests during the war years resulted in further deterioration of the timber stands. The United States forest service, the agency of the federal government charged with responsibility for promoting the conservation, protection and wise use of the nation's forests, reported in 1946 that the total volume of standing sawtimber in the United States had declined 9% after 1938.

The Civilian Conservation corps (q.v.), established in 1933 to help meet the problem of unemployed youth through public conservation work, was operating with more than 1,500 camps and 500,000 enrollees in 1937. In this program the department of labour was responsible for enrolment of men, the war department for maintenance and operation of the camps and several agencies, including the U.S. forest service, national park services, soil conservation service, Tennessee Valley authority and the state forestry departments, co-operated in supervision of work projects.

CCC work projects covered a wide field. Much of the work, however, was in the forests. During the nine years of its existence, the CCC planted more than 1,500,000,000 trees on denuded or fire-scarred forest lands; constructed thousands of miles of telephone lines, roads, trails and firebreaks and hundreds of lookout stations to facilitate control of fires; developed more than 3,600 camping and picnic grounds in national, state and community forests; thinned thousands of acres of crowded young timber stands and performed important service in combating forest insect and disease infestations. The CCC became the main line of defense against fire not only on all public forests but also on many privately owned forest lands.

By 1941, the U.S. defense program had greatly reduced the problem of unemployment, and many CCC enrollees and eligibles of draft age were going into the armed services. Congress therefore terminated the Civilian Conservation corps on June 30, 1942.

The national forest system administered by the U.S. forest service included 158 units aggregating 171,403,306 ac. as of June 30, 1937. By 1946, consolidations and boundary adjustments had reduced the number of national forest units to 152, but the total area had increased to 178,921,476 ac. The increase in national forest area resulted for the most part from purchases of land during the late 1930s, under authorization of the Weeks law of 1911. Land purchases were largely suspended during the war years. Some additions to the national forest area also occurred through land exchanges between the federal government and individual owners, and through donations. Much of the land acquired through purchase and exchange had been cut over and burned over, and the forest service faced a huge task of forest restoration on these depleted areas.

Timber sold from the national forests in 1937 amounted to about 1,250,000,000 bd.ft. Heavy demand during the war years increased annual timber sales to more than 3,000,000,000 bd.ft. In 1946 the total cut from the national forests under sales and exchanges was approximately 2,750,000,000 bd.ft. A program of access-road construction under way in 1946 to open up inaccessible stands of mature timber was expected to make possible a postwar increase in cut to or above the wartime figure. The forest service continued its policy of management of the national forests for a sustained yield of timber to insure permanent production and stability of dependent communities.

The number of visitors to the national forests for recreational purposes dropped from a piewar total of approximately 18,000,000 a year to 6,000,000 in 1944. With the cessation of gasoline rationing and other restrictions on travel, recreational use during 1946 was at rates exceeding the prewar total. Many of the national forest recreational facilities however, were in run-down condition because of lack of maintenance during the war years. With a special appropriation from congress, the forest service in 1946 began the restoration of recreation areas to safe and sanitary condition. Winter sports in the national forests increased greatly in popularity during the decade and accounted for an estimated 2,000,000 visits in 1946, more than double the figure ten years earlier.

With emergency funds allocated by President Franklin D. Roosevelt to the secretary of agriculture for planting protective strips of trees in the Plains region as a means of ameliorating drought conditions by giving protection from wind to soil and crops, the forest service in the fall of 1934 initiated a Plains Shelterbelt project. The first trees were planted in the spring of 1935, under a plan of leasing planting sites. Beginning in the spring of 1936, the work was set up as a co-operative undertaking with individual farmers. Administrative offices for the project, which was later designated the Prairie States Forestry project, were established at Lincoln, Neb., with state divisional offices in the capital cities of each of the states in which the project operated—North Dakota, South Dakota, Nebraska, Kansas, Oklahoma and Texas.

In the following seven years, 18,600 mi. of field shelter-belts were planted. More than 30,000 farmers participated in the program. Tree survival was remarkably high, and growth in most sections was rapid. Although the trees would not attain full height for many years, the beneficial effects of the tree belts in conserving soil moisture and protecting crops from wind damage began to be realized within a year or two after establishment.

On June 30, 1942, the shelterbelt planting program was

discontinued as a special project of the forest service, but co-operative aid to farmers in establishing shelterbelts was continued by the soil conservation service in that portion of the project area falling within state soil conservation districts in the Plains region.

The disastrous New England hurricane of 1938 damaged timber stands over thousands of acres. To aid landowners in salvaging the wind-thrown timber, the federal government set up a Northeastern Timber Salvage administration, administered by the forest service and financed by the Disaster Loan corporation. The forest service established log grades and prices to prevent disorganization of the timber market, set up more than 800 receiving sites, purchased and stored logs, sawed or contracted for sawing them into lumber and channelled the lumber into market outlets. At the close of the program in 1943, more than 660,000,000 bd.ft. of sawlogs and 35,000 cords of pulpwood had been salvaged. Thirteen thousand timber owners were aided

Products of the forests played an extremely important part in the conduct of the war. The U.S. army used a greater tonnage of wood than steel. The indispensability of wood was clearly demonstrated. In the early months of the war, wood was called upon to replace critical metals in many fields. Soon, however, wood itself became a critical material. War demands outstripped supply.

At the request of the War Production board, the forest service conducted a large-scale enterprise for the logging of Sitka spruce in Alaska to help meet urgent war needs for high-grade spruce lumber for aircraft construction. The logging was done by contractors. By the end of 1944, more than 38,000,000 bd.ft. of high-grade spruce logs were cut, assembled in huge rafts and towed 900 mi. to mills in the Puget sound area. In addition, some 46,000,000 bd.ft. of hemlock and lower-grade spruce were delivered to sawmills in Alaska for use of the armed forces there.

In 1949, the forest service was called upon to initiate a program to stimulate lagging production of lumber and other forest products required for war and essential civilian needs. A Timber Production War project was launched in states east of the Great Plains, with project foresters assigned to aid woodland owners and forest-products operators to meet acute problems of labour, equipment shortages, log supplies and other difficulties. The project foresters performed valuable service in bringing timber owners and operators together, helping operators keep up production and channelling products to essential war needs. By 1945, when the project was terminated, it had resulted in production of about 8,000,000,000 bd.ft. of forest products that probably would not have been produced otherwise. Much of the increased production was from the smaller mills and plants, many of which had previously shut down because of wartime difficulties.

Immediately after Pearl Harbor the federal and state forest services manned fire-lookout stations in the coastal areas, and for two and one-half years forest lookouts served as key stations in the army aircraft-warning system.

When Japanese conquests shut off foreign rubber supplies, congress, in the Emergency Rubber act of 1942, authorized a wartime project for domestic production of natural rubber. The forest service was assigned responsibility for the emergency rubber project. Major emphasis was given to planting guayule, a native rubber-bearing shrub which had been used for some years in Mexico as a source of commercial rubber. Nurseries were speedily established, acreage leased and planting started. Most of the work was concentrated in California, where some experimental work in guayule growing already had been



Ghostly remains of a giant Douglas fir after a great forest fire had raged for several weeks along the Oregon coast range in July 1945

done by the Intercontinental Rubber company.

Approximately 32,000 ac. were planted to guayule. The Intercontinental Rubber company's experimental process-

ing plant at Salinas, Calif., was enlarged and improved and a new plant was constructed at Bakersfield, Calif.

When the war ended and the project closed down, most of the planted shrub had not yet reached maturity. A total of 2,947,273 lb. of guayule rubber had been milled out, however, and sold to rubber companies during the life of the project. Several tons of rubber also were produced from wild guayule harvested in the Big Bend area of Texas. The project was terminated before it had gone far enough to determine the practicability of raising guayule as a peacetime commercial crop.

As a part of the emergency rubber project, the forest service also conducted some experimental work with *koksaghyz* (Russian dandelion) and various strains of goldenrod as rubber sources.

In 1942 the forest service undertook a survey of tropical timber resources in Central America and northern South America. Primary purpose of the study was to gather information on local woods suitable for bridge and culvert construction on the Pan-American highway, the woodshipbuilding program of the Inter-American Navigation corporation, military construction at cantonments, airfields and military bases and other wartime needs. A survey of sources for quinine supplies also was made in Colombia; and in 1944, at the invitation of the Chilean government, a forest service mission made a survey of the forest resources of Chile.

Throughout the war, work at the Forest Products laboratory, maintained by the forest service in Madison, Wis., was focused on war problems—finding wood substitutes for scarce materials, adapting natural or processed wood to military uses and promoting more efficient wood use. In providing data and specifications on the use of wood for aircraft, in designing economical and serviceable crates and containers for all sorts of military supplies and equipment, including anti-aircraft guns, armoured cars and trailers as well as munitions and other supplies, in training inspectors for wood products and packaging and in broadening the use of plywood, plastics and other chemical derivatives of wood, the laboratory made significant contributions to the war effort.

Many of the new products and processes developed to meet war needs held promise of important peacetime use. Among these were laminated wood, improved plywoods and such new products as "compreg," in which the character of wood was changed by compression and impregnation with synthetic resins. A methylolurea treatment of wood developed by the Forest Products laboratory resulted in making the wood harder, stiffer and more stable dimensionally. The products resulting from this treatment were named "uralloys." The laboratory developed a process for the production of industrial alcohol from wood, and the first commercial plant to use this process, begun during the war near Eugene, Ore., was ready for production in 1946.

Research by the forest service developed methods by which naval stores yields could be increased 40% or more in commercial operations by applying chemicals to freshly chipped pine trees. The method resulted in higher money returns to the operator, ranging from \$400 to \$700 additional net profit per crop of 10,000 trees.

Studies by the forest service at several western forest and range experiment stations pointed the way to successful seeding of valuable forage plants on millions of acres of depleted range lands. Increases in range livestock-carrying capacity of from two to more than ten times resulted from reseeding in accordance with the principles developed.

The decade 1937-46 brought many advances in forest-fire fighting techniques. Tractor-driven plows and "brush-busters," motor trenchers and improved tank trucks and portable pumps were some of the new developments in a trend toward increased mechanization of fire control. The forest service designed portable radio equipment, especially adapted to forest use, for emergency communication.

The possibilities of parachuting men to forest fires in inaccessible areas had been studied by the forest service for many years. The big problem was to devise safe methods of landing men in areas of dense tree growth or rough topography. In 1939, successful experiments in actual jumping were conducted, and the first crew of trained "smoke jumpers" was organized for actual fire fighting work in 1940 in Montana and northern Idaho. During the war, the forest service smoke-jumper corps was manned largely by conscientious objectors who volunteered for this work. The pioneer work of the forest service in this field was of great value to the U.S. army in organizing its parachute-troop units.

A barrage of Japanese balloon bombs presented a new threat to the forests of the western United States in 1945. Balloons carrying incendiary bombs were released in large numbers in the early months of the year, to be carried by prevailing westerly winds to the North American continent. The forest service smoke-jumper corps was augmented by army paratroopers, and other special protection measures were initiated. Although the balloon barrage lasted several months, no serious fires resulted.

One of the worst forest fires, however, occurred in the summer of 1945 in Tillamook county, Ore. Despite the efforts of several thousand fire fighters, the fire raged for nearly two months. It burned over more than 130,000 ac. Much of this area had previously burned over in 1933, and the 1945 fire completed devastation of what had once been one of the finest areas of virgin timber in the Pacific northwest.

In 1937, the chief of the forest service was Ferdinand A. Silcox, who had held that position after 1933. Silcox died in 1939, and for the following three years the service was under the direction of its associate chief, Earle H. Clapp. In Jan. 1943, Lyle F. Watts was appointed chief forester. A career forester, Watts entered the forest service in 1913. He served as a forest assistant, field examiner and national forest supervisor in several western states, as director of the Northern Rocky Mountain Forest Experiment station, and as U.S. regional forester for the north central and Pacific northwest regions. During an absence from the forest service in 1928, he organized and was first dean of the school of forestry, Utah State Agricultural college, Logan, Utah

The shortage of lumber and other forest products which had occurred throughout the war years continued after the cessation of hostilities. Lumber supplies in 1946 were inadequate to meet the demands for new home construction in an acute postwar housing shortage. While manpower shortages, labour strikes and scarcity of operating equipment were factors affecting lumber output, the increasing scarcity of readily accessible, merchantable standing timber was a major deterrent to greater production. The forest service reported that shortages of pine timber large enough to make good lumber were pronounced in various parts of the south. In the west, lumber producers were having to reach toward the more remote stands of oldgrowth timber. Long before the war, the timber shortage had curtailed output in the older timber-producing regions -New England, Pennsylvania and the lake states.

Second-growth stands upon which the nation was becom-

ing increasingly dependent were not producing the quality and kinds of timber needed for many uses. Quality decline was noticeable not only in the growing scarcity of choice, sought-after trees, but also in the general deterioration of many timber stands. Long years of "creaming" the forests for desirable timber, according to the forest service, had resulted in reduction in the percentage of valuable species and a consequent increase in the proportion of low-value trees. A general downward trend in tree sizes was reported in the eastern half of the country, containing three-fourths of the nation's total area of commercial forest land.

Virgin and natural second-growth timber formerly had provided almost the entire supply of wood in the United States. Since the nation was becoming increasingly dependent upon its annual timber crop, positive measures to grow the timber were necessary. To meet the prospective needs of an expanding national economy, the forest service announced, the growth rate of sawtimber in the country's forests should be built up to double the 1946 rate. The forest service recommended a comprehensive national program of forest conservation and restoration, including more intensive protection against losses from fires, insects and tree diseases; large-scale planting to restore millions of acres of depleted forest land to productivity; measures to reduce waste and obtain a more complete utilization of the annual timber crop and action to put a stop to destructive practices and to encourage wider adoption of good management practices in the forests.

Forestry was included among the functions of the United Nations Food and Agriculture organization when that international body was established in 1943. In March 1944, a technical committee on forestry and primary forest products was set up, with representatives of nine nations participating, under the chairmanship of Henry S. Graves, dean emeritus of the school of forestry of Yale university. The committee, in April 1945, issued a report outlining world forest problems and indicating the fields of forestry in which it suggested the F.A.O. should operate.

The technical committee's report called attention to the fact that a timber shortage remained widespread throughout most of the civilized world. "In the face of rapidly multiplying uses for wood which create ever-mounting wood needs," it said, "the world is confronted by the inescapable fact that the forests—sole source of wood—are steadily diminishing." The report pointed out that more than 60% of the softwood timber upon which the world depended for construction material is in North America and Europe. Of the once heavily forested continent of Europe, only three countries still had appreciable quantities beyond their national needs. Life among the crowded millions in China and India was forced to adjust itself to the privations imposed by chronic wood starvation.

The report ranked wood second in importance only to food among the world's raw materials. "Next to agricultural crops," it said, "forest crops have contributed most to human progress and security and, like agricultural crops, forests possess the unique advantage of being renewable. Within wide limits man can adapt them to his needs, and by wise husbandry increase the yield and usefulness of their harvests. . . . Over 90% of the world's annual wood harvest is retained for domestic consumption, yet the remaining 10% has reached third place [outranked only by cotton and wool] in value among all commodities entering international trade, and forest products are among the largest freight customers of the world's railroad and shipping lines. . . . Yet in spite of the proven social and economic benefits that managed forests provide, today less than 15%



Thousands of acres of timberland were destroyed in Big Horn national forest when lightning struck the area on July 31, 1943, causing one of Wyoming's most disastrous fires. Soldiers joined with forest rangers and civilians in attempting to control the spread of the flames

of the world's timberlands are being handled as a renewable, continuously reproductive resource. Twenty percent additional receive some degree of protection but are still regarded as a timber mine, and by far the greater part—about two-thirds of the world's forests—receives neither care nor protection."

In 1946 a permanent Division of Forestry and Forest Products was established under the United Nations Food and Agriculture organization. Marcel LeLoup of France was named permanent director, and international head-quarters were set up in Washington, D.C. LeLoup was formerly chief of the French department of waters and forests, and a member of the French council of state. Stuart Bevier Show, a member of the U.S. forest service, was appointed deputy director. An advisory committee of forestry experts from various member nations was selected.

The international forestry organization prepared to set up world-wide forestry statistical services, assist governments with advice on forest policy, send out missions to make scientific studies, promote research and circulate findings among nations and facilitate exchange of scientific personnel. (See also Tennessee Valley Authority.)

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Great Britain.—The hard lessons of World War I led in 1919 to the formation of the forestry commission in Great Britain with the task of implementing a policy of replanting the felled-over woodlands and of greatly expanding the area of forest by new planting. In 1939, accomplishment had not fallen short of plans despite the serious financial difficulties that had been experienced dur-

ing the period of economic depression. An extensive forest area totalling nearly 400,000 ac. had been built up by the state, and it included big new artificial forests such as that around Thetford in East Anglia, with about 40,000 ac. of plantations. Equal progress had not, however, been attained with the replanting and improvement of the 3,000,000 ac. of private forests; in fact about 400,000 ac. that had been felled during World War I had still not been replanted. Although the total area of woodland was thus not very different from the 1919 figure, in 1939 a large proportion carried only young crops, few of which could yield even small timber such as mine props, while many of the older woods had been skimmed at least once of much of their better timber.

Notwithstanding this unsatisfactory position, the woodlands of Britain supplied nearly one-half of Britain's timber consumption in World War II instead of the peacetime 5%, but only at the price of a sacrifice far exceeding that of any other country, even including those in the paths of the contesting armies. About two-thirds of the total standing softwood timber and one-third of the hardwood was felled during the war years, and relatively little could be replanted.

The consequence was that in 1945 Britain had nearly 1,000,000 ac. to replant in order to restore the original area under woodland, and there was a very large further area in which the stocking was so depleted that production was only a small fraction of what it should be.

Plans for a new policy and an expanded program were drawn up in 1944 for presentation to parliament and were for the most part adopted. First the forestry commission was brought under the control of the minister of agriculture. The staff was reorganized with increased decentralization, and separate national committees were set up for England, Scotland and Wales. The new planting program aimed at a total of 500,000 ac. in the next ten years and 3,000,000 in 50 years, at the end of which time the production of the state forests together with the improved outturn from private forests was estimated to meet about one-third of the country's current timber requirements, and the standing reserve should be adequate to tide over a reasonable period without imports.

An important change was the introduction of state control over privately owned woodlands. Owners were invited to "dedicate" their forests to timber production, managing them according to an approved plan and thereby becoming entitled to a subsidy of f_{10} per ac. for new plantations together with g_{s} . f_{10} per ac. per annum for a maximum of f_{10} years for all woodland properly maintained; alternatively the owner could claim annually one-quarter of his net approved expenditure.

Further experience was gained in the improvement of planting methods, notably with the use of specially designed ploughs. Among softwoods, the Scots and Corsican pines, the Norway and Sitka spruces and European and Japanese larches continued to be the main coniferous species planted, with less Douglas fir, western hemlock, etc., while oak, beech and ash were used on suitable sites. The search continued for the best races of these trees for use in Britain and also research on pruning, nursery technique, utilization of small material from thinnings and on many other problems.

The British Commonwealth.—In the commonwealth countries, the major developments during the decade 1937–46 were almost all related to wartime demands. Where there was already a well-developed timber industry and

export as in Canada, it was largely a question of the maximum production possible with limited labour supplies, and inevitably less attention was given to management considerations. In India, too, the demands on the forests not only for sawn timber but also for small material and fuel were practically boundless, and the cut was limited only by shortage of labour and transport. Here, however, great assistance was derived from the existence of detailed management plans, and the damage and disorganization caused by these exceptional fellings were far less than they would have been without such plans; it was estimated that it would take ten years to restore the situation.

Where timber-bearing forests existed but facilities for exploiting them were little developed, as in West Africa, there was again a great drive to train more labour and to improve extraction facilities, and so to increase production.

Whatever the stage of mechanization and industrialization that existed at the outbreak of World War II, expansion took place to an extent limited only by obstacles such as lack of labour, materials or essential machinery. Hand-sawing operations were introduced and greatly expanded in hitherto unworked African forests, while India saw a tremendous increase in its wood industries, e.g., plywood factories increased from 3 to more than 30. These developments seemed likely to mark an important early step in more intensive working and in industrialization.

Several of the commonwealth countries, like Britain itself, had become accustomed to import their timber requirements, especially softwood. During the war they found their supplies cut off, and the same measures were forced on them as in Britain. This involved procuring maximum production of homegrown material and using different kinds of timber for the various kinds of work in place of the customary kinds no longer available. Australia, New Zealand and South Africa all found their extensive exotic softwood plantations of the greatest value, and their further extension was likely to result. Imports were sought from new sources hitherto little drawn-on but still open; thus, South Africa drew on the central African forests to a significant extent. Similarly, where new kinds of timber were found suitable for certain purposes, some at least were likely to hold the place they had attained.

Everywhere, the attention drawn by urgent wartime demands to the importance of wood as a primary product and as the raw material for other industries led to much increased recognition of the need for efficient forest protection and management to ensure maximum sustained supplies. At the same time, realization of the evils attendant on the destruction and mismanagement of the remaining forest resources, which was already spreading during the preceding decade, became much more general, and active steps were taken or at least planned in many countries. In the drier parts of the tropics and subtropics the risks were greatest. Perhaps India, where the problems were doubly acute because of the vast, rapidly increasing population, made most progress in introducing soilconservation measures, including special cultivation methods and plantation work. Another important development well illustrated in India and East Africa was the rapid extension of protection and simple management to village forests and plantations to supply village demands.

A basic requirement for the assessment of resources and their planned management was adequate mapping, and here, too, great progress was made through the use of aerial photography as a far more rapid and ultimately cheaper method than any form of ground survey. Canada led the way in this matter, and the interpretation of aerial

photographs to yield information about vegetation types and tree crops made much progress. Programs for bigscale work were drawn up and work began in several countries. Timber census methods also received a good deal of attention.

Considerable progress was made in the botanical study of the colonial forests and in the foundation of forest schools to train men locally for forestry work.

A significant event also was the creation in 1938 of the imperial forestry bureau financed co-operatively by the commonwealth governments to give an information service to all.

Continental Europe.-Already before World War II, Germany openly began overfelling her forests in order to reduce imports; at the same time a campaign was launched to build up the additional acreage necessary ultimately to meet her full domestic requirements. In 1936, a world forestry conference had been convened at Budapest and, as the outcome of its resolutions, a new international silvicultural centre was set up in Berlin, though only a few countries joined. Germany's policy was then to make agreements with other central European timberproducing countries, giving her control of as large a proportion as possible of the supplies of this important raw material. Moderate overfelling continued throughout World War II, and the forests were then called on to provide much timber by way of reparations and for internal reconstruction, so that it would be long before the final position could be assessed. World War II brought about serious overfelling and much forest destruction in other countries, especially in Poland and Czechoslovakia, but the felling and damage were not so extensive as was thought at first, except over limited areas. Shortages of labour and inadequate transport facilities were undoubtedly the saving cause. One of the most seriously devastated regions was the pine forests of southwest France, where enormous destruction by fire occurred, 500,000 ac. being burnt out.

The years 1937-46 saw increasing recognition of the importance of collecting reliable information as to the timber content of the forests and their growth, and there was continued study of methods of obtaining the required data expeditiously without loss of accuracy by the adoption of appropriate sampling techniques.

Norway and Sweden were particularly active in this direction.

The application to forestry of modern developments in the science of genetics made further important progress, notably in Denmark and Sweden, where research institutions were set up for tree-breeding research. The most interesting results were obtained with intervarietal and interspecific hybrids and with plants possessing more than their normal complement of chromosomes (such as the giant aspen).

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Forgery

See Secret Service, U.S.

Formosa

Also known as Taiwan. Formosa was a province of Japan from 1895 until 1945, when it was restored to China after Japan's defeat in World War II. A large island in the western Pacific, it is separated from China by the Taiwan straits and from the Philippines by the Bashi and Balintang channels. Under Japanese rule, the Pescadores (Bōkotō) and other outlying islands formed a political division of the Taiwan government-general. Area, 13,429 sq. mi.; pop. (1940) 5,872,084. Capital, Taihoku (326,407, census of 1940) in the northern part of the island. Other large towns: Tainan (142,133), Takao (152,265); Keelung (Kirun) (100,151).

Post-Liberation.—After 50 years under Japanese rule, the rich and beautiful Pacific island of Formosa, known to asiatics as Taiwan, was formally surrendered to China Oct. 25, 1945. The transfer back to the country of which Formosa had been a part for nearly two centuries was the result of a decision by President Franklin D. Roosevelt, Prime Minister Winston Churchill and Generalissimo Chiang Kai-shek at Cairo, Nov. 22-25, 1943. For the first time in its history, the white sun and blue sky flag of modern China was hoisted over Formosa at a ceremony

Japanese citizens, carrying their possessions with them, are shown at the bomb-torn capitol building in Taihoku, Formosa, where they were being registered for repatriation in 1946



at the former official residence of the Japanese governor general.

The transfer was certain to strike a heavy blow at Japanese living standards, but the ultimate effect on China and on the Formosans remained to be determined. Both before and during World War II, Japan depended heavily on the island for sugar, rice, camphor, tropical fruits and foodstuffs as well as for the military and naval protection afforded by bases developed there. The Japanese had exploited raw materials and labour to the interests of their home islands, where much food had to be imported even in peacetime.

While sugar refineries, shipping and the larger cities themselves suffered considerably from bombing by United States planes and submarine activity during the war, the sudden removal of the authority under which the islanders had lived for 50 years caused perhaps greater hardships for a time than the war itself.

The industrial breakdown was due in a large measure to a sudden ousting of Japanese engineers, technicians and supervisors under pressure from the U.S. department of state and over the protests of the Chinese government. In July 1946, 7,018 Japanese civilians were retained by the Chinese authorities to help carry on the main industrial and technical work of the province. Of these specialists, 2,739 were employed in mining and industry, 1,162 in communications and 1,205 in agriculture and forestry.

By August of the same year the new rice crop had begun to alleviate the food shortage, which had been due in considerable degree to failure of Japanese to import fertilizer during the war.

Japan brought the sugar industry of Formosa to its height about the year 1942, at which time there were 42 modern refineries in operation in four trusts. This was by far the biggest industry on the island. Nearly all these plants were wrecked or damaged by bombing during the war. Twenty had been put back into operation by May 1946. Up to the outbreak of the war, 650 mi. of government railroad, 320 mi. of private and 1,250 mi. of plantation railroad had been constructed, much of it to serve the sugar industry.

The rice production of the island in 1938 was 1,600,000 tons, half of which was shipped to Japan. By 1939 irrigation had been extended to 62% of all cultivated land. Sugar export in 1938 was about 1,000,000 tons. These two crops probably saved the Japanese from starvation during the war.

War Importance.—Formosa was an important staging base for Japanese troops and for air and naval movements during World War II, also giving protection to shipping between the main islands and the rich overrun territories of the Malay archipelago and the East Indies. It was from bases on Formosa that Japanese bombers struck United States airfields and the Cavite naval base on Luzon in support of Japanese troop landings in Dec. 1941.

The island's southern port of Kaohsiung (or Takao) was a major stop for Japanese convoys, having an extensive protected anchorage for vessels of all draft, and a small, well developed inner harbour, with tank storage and with coastal defense guns. The main naval base was at Mako, an excellent harbour on Oenghu, largest of the Pescadores, a short distance west of Formosa in Taiwan strait. Kilung (or Keelung) on the northwest tip of Formosa, though smaller than Takao, also was a strongly fortified naval, air and seaplane base. Seventeen air bases and a number of landing strips were developed on the main island and the

Pescadores immediately before and during the war, principal among them being Pingtung, Hsinchu and Chiayi. Formosa was heavily garrisoned during the war, with the headquarters of the Japanese army at Taihoku.

It was in the jungles of Formosa that Japanese generals trained their effective jungle fighters before taking them into action in the South Pacific, the Philippines and Malaya.

All principal installations, as well as nearly all industries were heavily bombed by United States airmen during the last two years of the war. The first raid was in Nov. 1943, when the 14th U.S. air force, based in India and China, struck the air field near Shin-chi-ky. Raids by the same force followed at intervals for several months. In Oct. 1944, long range Superforts of the China-India theatre bombed the island, as did carrier based planes from a U.S. naval task force. After Douglas MacArthur partially recaptured the Philippines, increasingly heavy air attacks were staged from U.S. bases there, destroying or damaging most of the important military and industrial targets on Formosa.

For a time, Lieutenant General Jonathan M. Wainwright and some 250 other U.S. prisoners taken by Japanese at Bataan were held on Formosa, as were Sir Mark Young, British governor of Hong Kong before it fell to the Japanese in 1942, Sir Shenton Thomas, governor of the Straits Settlements and many other British officials from Hong Kong and Malaya, together with some Dutch officials from the Netherlands Indies.

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Formosa: Sta	atistical Dața, 1938	
Item Exchange rate	Value (000's omitted)	Amount or number 1 Yen = 28.4 cents (1s. 2d.)
Finance Government revenues	\$57,709 (£11,804) \$44,510 (£9,104)	
Transportation Railroads		2,399 mi. 360 mi.
Communication Telephones		19,161 734 mi. 135,055
Crops Sugar cane		9,737,571 tons 1,902,805 ,, 1,481,836 ,,
Livestock Poultry		9,512,000 1,827,000 325,000
Forest products Timber		272,000 cu ft * 488,319 tons* 71,649 ,, *
Sea Products Shark		9,152 tons* 7,391 ,, * 6,031 ,, *
Manufactures Total	\$108,085 (£22,108) \$75,367 (£15,416) \$10,207 (£2,088)	5,217 ", *
Exports—Total	\$6,978 (£1,427) \$129,866 \$53,846 (£11,014) \$36,640 (£7,494) \$3,779 (£773) \$2,962 (£606)	1,099,000 tons 716,000 " 293,000 "
Imports—Total	\$104,318 (£21,337) \$7,345 (£1,502) \$6,648 (£1,360) \$4,190 (£857)	37,776,000 cans 205,000 tons 466,000 tons
Education Primary schools (Japanese) Teachers Students Native schools Teachers Students *1937	· · ·	143* 1,108* 43,671* 788* 7,242* 445,396*

Forrestal, James

Forrestal (1892-), U.S. secretary of the navy, was born on Feb. 15, 1892 in Beacon, N.Y. He studied at Dartmouth college, 1911-12, and at Princeton university, 1912-15. Enlisting in the U. S. navy in 1917, he was assigned to its aviation force, received training with the royal flying corps at Toronto, Canada, and was made an ensign in Nov. 1917. Forrestal resigned from the navy with the rank of lieutenant in 1919, and resumed an earlier connection with Dillon, Read and Co., a Wall street banking firm, becoming its president in 1937. He was a moderate New Dealer, favoring cooperation between Wall street and the government and approving of stock-market regulation by the government. In Aug. 1940 he became undersecretary of the navy, serving in that capacity until the death of Sec. Frank Knox, whom he succeeded on May 19, 1944. As secretary he advocated a large postwar navy and peacetime draft.

Forster, Albert

Forster (1902-), German politician, was born Aug. 27, 1902, in Fuerth, Bavaria. His training was for commerce, but after two years of apprenticeship in a bank he was dismissed for membership in the nazi party. He was then a local nazi group leader at Fuerth for five years. Moving to Danzig, he became Gaulester (district leader) of that city in Oct. 1930. In that year also he was elected to the reichstag. In April 1933 he was appointed leader of the Organization of German Employees in Danzig, and four months later was a Prussian state councillor. He also edited the newspaper Deutscher Vorposten. Forster came into international prominence in 1939 during the disputes over the Free City. On Aug. 10, after a visit with Adolf Hitler, he declared the imminence of Danzig's return to the reich, and two weeks later he was elected head of the government of Danzig, replacing Arthur Greiser. On Sept. 1, 1939, the day Germany invaded Poland, he proclaimed in a letter to Hitler the formal reunion of Danzig with Germany. Then Forster sank into relative oblivion, only to surrender to Allied troops in Hamburg in May 1945. He was placed on trial before Poland's Supreme National tribunal in Aug. 1946.

Foundations

See Donations and Bequests; Societies and Associations.

Four Freedoms

When Franklin D. Roosevelt addressed the congress of the United States on "the State of the Union" in a world at war on Jan. 6, 1941, he had behind him eight highly eventful domestic years. No president of the United States, other than he, had ever been officially through more than two terms. The eight years he looked back upon had been, comparatively speaking, a lengthened season of economic depression. Such a season permitted, and might even require, new approaches to national problems, as in this case it had also precipitated a series of international crises.

The president of the United States, leader always of his own party while being at the same time spokesman for the nation and to the world, can never ignore public opinion at home even though he be addressing in intent a world-wide audience. President Roosevelt was fully aware of domestic attention when he applied the Four Freedoms, as he put it, "everywhere in the world." Indeed, he was consolidating the national background to use it as a

beachhead for an already fearful international foreground. He made ready to face with a four-pronged formula that "rendezvous with destiny" to which he was patiently trying to accustom a people proud of their role but provincial in perspective. And this is what he said, as directly relevant to the subject here under consideration:

In the future days, which we seek to make secure, we look forward to a world founded upon four essential human freedoms.

The first is freedom of speech and expression—everywhere in the world.

The second is freedom of every person to worship God in his own way-everywhere in the world.

The third is freedom from want—which, translated into world terms, means economic understandings which will secure to every nation a healthy peacetime life for its inhabitants—everywhere in the world.

The fourth is freedom from fear—which, translated into world terms, means a world-wide reduction of armaments to such a point and in such a thorough fashion that no nation will be in a position to commit an act of physical aggression against any neighbor—anywhere in the world.

To expose the four freedoms, background properly buttressing foreground, it is well to consider the ideals in an order reversed from that of their presentation in the famous address. It was the last two, the negative ones-freedom from want and fear-that Roosevelt had been struggling to secure for his countrymen. The first two, the positive ones-freedom of expression and of worship-were secure in the U.S. as a matter of long tradition and of common reverence. Though established slowly enough and with great difficulty-the thrilling story of colonial and early national history-freedom of worship and of speech were as domestically dependable at the time Roosevelt spoke as anything political could be. Violation of conscience had come to be all but unknown in America and offenses against freedom of expression unusual and infrequent. The president of the republic had every right to be proud of the fact that despite the attrition of a deep and long depression which had tried men's souls and strained their patience, neither freedom of worship nor freedom of speech had been in serious danger during the strenuous decade then drawing to a close.

Suspicion there had been on the part of liberals; doubt there had been on the part of conservatives. Charges indeed there had been on the part of both. But of supporting facts there was such paucity that the president was within his rights in feeling proud of the New Deal record in regard to these positive freedoms that the United States had long symbolized to the world.

That was the background as touching the traditional freedom of speech, and a background no less solid as touching freedom of religion.

But as regards the other freedoms, Roosevelt had opened his first administration with an onslaught against a nation-wide psychological insecurity. Men by the millions found themselves victims of circumstances which they could not control and of forces which they feared because they did not understand. The physical resources of the nation seemed intact; population was replete and still growing; but things were somehow askew, and fear was riding the citizenry—fear and with it not a little want. Roosevelt had electrified the nation upon the occasion of his first inaugural by declaring, in the light of the nation's basic soundness, that it was his "firm belief" that "the only thing we have to fear is fear itself. . . ."

Though there were subsequent noisy domestic battles, freedom of conscience stayed, freedom of speech stood;

fear of extreme want slowly receded; but fear remainednot as at home "nameless, unreasoning, unjustified terror," as he had described the original paralysis; but, on the international horizon, a fear of more than fear itself, a reasonable fear that subsisted, persisted, and in unfortunate lands ran riot upon the rack of concentration camps. There had been a season of easy assurance in the U.S. by those who thought that they "could do business with Hitler." But this shallow version of what was fearful in totalitarianism had slowly given way before successive aggressions in Asia, in Africa, in Europe. The world fear that was gnawing at American hearts was more tangible than any psychological illusion internationally projected. By the time the president spoke, there was coming to be an all-American fear of the most fearful things in human experience: of loss of access to truth and justice, of racial and religious persecution without recourse, of bodily maceration: in fact, of sadism that knew how to break men spiritually as well as physically. This fear which Americans had come slowly to feel for themselves was already rampant throughout the exposed portions of the globe.

The audience, both domestic and foreign, was sensitized to an appeal such as Roosevelt made: those who retained their freedom feared to lose it and those who had lost it hoped almost against hope to regain it. The four-freedoms speech was, therefore, a bid to focus the world's attention upon a common symbolism to turn the edge of desperate fear in all lands. The speech should be judged against its success in achieving and maintaining what Woodrow Wilson's Fourteen Points achieved but found difficult to maintain. As an international statesman, Roosevelt had a threefold task: to steel world opinion against the dictators for the longer and harder pull of war, to prepare U.S. public opinion for stepped-up preparedness and, as it turned out, for eventual intervention on the side of the more democratic forces, and to further the final victory by consolidating all the forces of mankind in a new ideal for what the Fathers had called "the perfectibility of mankind." To get men to believe in the face of disaster, torture and death that continuous struggle was worthwhile, that from cumulated effort something of precious value would dependably come-this was to make propaganda count for all that propaganda was worth.

Whoever shows men that their ideals are not expendable becomes an agent of historic significance at any crossroads of history.

Propaganda and Deed.-As pure propaganda, Roosevelt's speech was undoubtedly powerful. It raised the tonicity of hope in many lands, and in the United States became the norm for future reference and appeal. And well it might; for by preaching against want and fear it appealed to the possessive, the acquisitive instincts of mankind and by preaching up free speech and untrammeled conscience it appealed to the creative impulses of men everywhere. Its success was not tangibly to be measured, but was nevertheless to be discerned through a succession of events, events which at every stage made successful use of the vivid symbolism of creating and enjoying the good things of life. The immediate success was in three stages: the first stage was propaganda of the hopeful word, the second was propaganda of the determined deed and the third was propaganda of the everliving vision of a good age coming on: "a definite basis," as Roosevelt himself put it, "for a kind of world attainable in our time and generation."

Hardly had the sound of the president's voice faded

from the airways of the world when his budget message, of 1941, gave steel-edge to his words. He called for an expenditure of some \$11,000,000,000 for the defense program initiated the preceding year upon the "arsenal for democracy" proposal. The lend-lease program, as psychologically adroit as it was economically ground-based, followed hard upon a program which presently begot \$7,000,000,000 more to implement the determination, as the president put it, "to move products from the assembly lines of our factories to the battle lines of democracies—now."

Meanwhile Secretary of State Hull, in a congressional hearing upon the lend-lease project, had helped mightily the transition from propaganda of the word to that of the deed by declaring that, "It has become increasingly apparent that mankind was face to face with an organized, ruthless and implacable movement of steadily expanding conquest; that we were in the presence of forces which were not restrained by considerations of law or principles of morality; that these forces had no fixed limits for their program of conquest; that they had spread over large areas on land and were desperately struggling to seize control of the oceans as an essential means of achieving and maintaining the conquest of other continents."

Then on April 10, 1941, only a month after the passage of lend-lease, the U.S. department of state announced an agreement regarding Greenland, which had no other thought in its tradition-breaking import "save that of assuring the safety of Greenland and the rest of the American continent, and Greenland's continuance under Danish sovereignty." The agreement, nevertheless, provided for the right of the United States to locate and to maintain air bases there and to do whatever else was necessary to prevent aggression against Greenland and aggression from Greenland against the western hemisphere. This agreement and the lend-lease provisions that began immediately to be implemented, were sufficient to dramatize how without delay propaganda passed from the verbal to the visible, from the symbolic to the substantial.

All of this Secretary Hull made clear in an address to the nation on April 24, 1941. He declared that "the aggressors not only did not wish peace but literally did not believe in it; that behind the deceptive protection of the word 'peace' they accumulated vast striking forces; they infiltrated shock troops disguised as peaceful travelers and business men; they set up organizations for spying, sabotage, and propaganda; they endeavoured to sow hatred and discord; they used every tool of economic attack, bribery and corruption to weaken the countries with which they were at 'peace' until a military movement could easily complete the task of subjugation.

"Peace of that type," he concluded, "was nothing more than a 'trap' into which many nations had fallen in earlier phases of this movement for world conquest when its true nature had not been understood."

Meantime, the secretary undertook to guarantee that continuing U.S. propaganda of the word should not fail to give wings to the deeds that were being struck for freedom. He sent instructions to U.S. diplomatic officers in all neutral European countries to see that neither the words nor the deeds should be hidden under a bushel of politeness to the most impudent forces mankind had yet seen. "The Missions were to stress that we were absolutely convinced that the forces of aggression would be defeated ... we intended to play our part in resistance. ... Therefore it was incumbent upon every representative of the United States and upon every United States citizen abroad to reflect 'the absolute determination' of the United States 'to see this thing through.'"

As uplifted words became thus determined programs of world-shaking action, the double propaganda went unremittingly on. The Office of War Information kept up a barrage round the world, as the war extended and deepened, all in the spirit of the four freedoms and not infrequently in its very terms. A pamphlet was issued by that office-under the title "The United Nations Fight for the Four Freedoms." Beneath an inspiring picture on the front was written "The Right of all Men-Everywhere." This brochure gave interpretation and illustration of these four ideals, and gave both in terms calculated to keep them before world opinion not only as lofty thoughts but also as concrete hopes upon which common men could depend there and now, or very soon. With steady realism of exegesis, this document in all its studied overtones made vivid the possibilities of a better tomorrow for suppressed and suffering millions. Its massive power-for it was the pinnacle reached by propaganda during the war; the only approach, but it a near approach on a world-wide scale, to Tom Paine's achievement during the American Revolutionary War-could best be seen by reading the special introduction to it written by President Roosevelt himself:

The four freedoms of common humanity are as much elements of man's needs as air and sunlight, bread and salt. Deprive him of these freedoms and he dies—deprive him of a part of them and a part of him withers. Give them to him in full and abundant measure and he will cross the threshold of a new age, the greatest age of man.

threshold of a new age, the greatest age of man.

These freedoms are the rights of men of every creed and every race, wherever they live. This is their heritage, long withheld. We of the United Nations have the power and the men and the will at last to assure man's heritage.

The belief in the four freedoms of common humanity—the belief in man, created free, in the image of God—is the crucial difference between ourselves and the enemies we face today. In it lies the absolute unity of our alliance, opposed to the oneness of the evil we hate. Here is our strength, the source and promise of victory.

Here at last was match, and over-match, for Dr. Goebbels, who never wrote anything more heart-warming, more muscle-moving than this.

Though the results were not long in coming, they were never wholly removed from the nostalgia that sees in every achievement "a human dream badly damaged at the birth." At times indeed they were touched at the fringe with frivolity or irony or gaiety.

While each of the Allies had its own favoured symbol of decency and hope, it was safe to say that the four-freedoms formula became and remained the standard U.S. ideological and idealistic thrust through the war and into the future. Its language ran through the Atlantic charter and its intent was not far from that of any subsequent great-power agreement. Consonant with the American tradition, the projection was in terms of the individual rather than of the state. It was even more explicitly so than Wilson's Fourteen Points, for there the emphasis fell upon collectivities and their rights (e.g., group self-determination) more than upon what the individual might hope to get out of the struggle. It was true, but little noticed, that in his war interpretation of the two negative freedoms, President Roosevelt made freedom from fear emphatic upon national disarmament and freedom from want mean economic opportunity on a national scale. Nevertheless, the form of immediate appeal and the residue of meaning that most fully outlasted the war, for the negative freedoms as for the positive freedoms, were individualistic -and were meant to be so. Good propaganda does not scatter its shots. Not only does each man have a hunger to talk and a thirst for worship, but each has also his intimate fears which he would be relieved of and his pressing wants that he would have fulfilled.

The New Freedoms "From."—If the longer U.S. tradition thus got expression in the ringing phrases, the more immediate background of depression also got projected through the formulation into a foreground relatively new to the United States, though so old in general that it had already become traditional in Europe and Asia. This was the "security" motif which the four-freedoms formula connoted. The voice was American, enunciating freedom, but the hands that were working while the voice spoke were weaving newly for American idealism a pattern that was invidiously "foreign." Though the appeal was to the individual, the freedoms "from" which were offered him had to be in large part gifts from authority, not individual achievements under a pioneer economy of self-help.

The Russian pattern had long been set to this ideological configuration, a pattern in which even the tsar was "little Father" no less than Stalin to the little man. In Latin lands, not excluding South America, not only had the state long been paternalistic, more so than in the United States, but the religious environment in which all else found final symbolism was adorned by a spiritual fatherhood personalized as fully beneficent and dispensing to each individual infallible guidance from mortal error. Even in England and other members of the British commonwealth (notably in New Zealand) "socialistic" governments had already one time or more symbolized the Anglo-Saxon drift away from laissez-faire. (Already a half century had passed since the English schoolboy was reported to give as Nelson's dying words: "Every man expects England to do her duty!")

In the United States this drift toward the "welfare state" had come to full consciousness only lately, and had indeed been hailed as beneficent only during the depression under the Roosevelt regime. If before that, state intervention had been necessary to allay fear and to free men from want, it would have been considered a necessary evil. Roosevelt had done gladly what Herbert Hoover had been driven to do grudgingly. This development in attitude was itself a bone of political contention throughout the U.S., in which contention the previous question was constantly being raised: the superior desirability of a "free economy" in which not security but risk was the fecund womb of progress. Instrumentalities of power and influence, however, were in America carrying the day for the new viewthat the state owed to every citizen enlarged security: the security of a job, the security of health insurance, the security of a subsidized old age, etc. Walter Lippmann, accounted conservative, had himself found "the new imperative" in American life to be, by consent of both great parties, that government must accept responsibility for some minimum standard of life for all its citizens. It was this newer tendency domestically which the two freedoms "from" caught up and used to project U.S. war efforts onto a road being graded in America but as yet widely travelled only in older lands.

This projection of the service state did not eventuate without U.S. suspicion and recurring dissent. It was from this dissent, and the lag it superinduced, that there arose the necessity of a final word upon the postwar significance of the war propaganda of the four freedoms. As there were constant party charges that Roosevelt was using his office as commander in chief to the advantage of his own party at election time, so also was there fear, and at times conservative alarm, that he was using the international emer-

gency to consolidate a New Deal program, otherwise slipping at home, with victory on the field of battle, in order to guarantee partisan advantage to a view of national life still in domestic dispute.

The Saturday Evening Post, in a wartime editorial "Four Freedoms Are An Ideal," made the point that the Four Freedoms represented an idealistic conception of man's striving toward a better world rather than a specific program capable of immediate attainment. The editorial allayed the fears of some Americans that the Four Freedoms would be used as a pretext for attempting to foist a world-wide New Deal on distant peoples or to impose on the United States a collective economy. On the contrary, the editorial declared there was nothing in the concept of the Four Freedoms which was foreign to the ideals and ambitions held by American people since the beginning. Wise observers were prepared, however, to find the battle against the "welfare state" long continued in America, with electoral see-sawing which might now and then prove embarrassing to America's international relations (as the echoes of the four-freedoms war propaganda died away).

Nor would such wise observers omit to raise the final question about all propaganda: its effectiveness in getting done what it suffices only to get hoped. Winning the war was more important during the war than reconstruction thereafter. The propaganda was primarily meant to win the war, including that as the major purpose of the fourfreedoms line. Sufficient unto its day is the good thereof. Roosevelt may himself have been prepared to follow through into international deeds what the war kept largely, so far as multi-domestic justice went, to propaganda of the inspired word. But his party, as became manifest to all upon his death, was only half prepared to fight out domestic issues along this line, and as for even one-tenth of a pint of milk for every child throughout the world, did they not have coconut milk at the small self-help of climbing the trees? Probably the deepest undercurrent of American life still ran in all parties against the too close participation of the state in individual activities. Intervention in that most personal of all spheres, religion, was constitutionally forbidden, and was frowned upon elsewhere save as an exception befitting an emergency. As a democratic document, with an eye upon issues of justice, the four-freedoms doctrine had two uses, but also two dangers in the postwar world.

As for its uses, it served mightily to recommend to the whole world the two positive freedoms—of conscience and speech—which were deeply embodied in American tradition, and to keep alive as a concrete ideal in lands more socialistic than the United States the hope that psychological and economic amelioration need not necessarily stop short of "the perfectibility of mankind." The sky was the limit of spiritual hope. To have democracy identify extravagant hope with its own promise to the world may have helped and might again help it through difficult season to compete with the continuing promises of amelioration that communism made to the dispossessed in all lands. As a competitive device, however, the alliance between parliamentarianism and romanticism was not without its own dangers.

Political Gresham's Law.—Two of these dangers were obvious and important. So far as mere promising goes, the bigger promiser is likely to win the day. There is a scrupulosity about democratic promising—at least a vagueness, if not ambiguity, superinduced by advance knowledge

of the slowness of gradualistic means and the poverty of precipitate power—which puts democracy at a genuine disadvantage with those who are convinced of the inevitable fulfilment, cosmically speaking, of all that they promise. More romantic than U.S. war promises were Russia's peacetime promises (operating through class-war means). So far as men took promises in lieu of performance—and the extent was probably greater than realists had ever acknowledged—there seemed to be operative a sort of Gresham's law of politics: that the unrestrained promisers drive out the necessarily restricted performers.

The other danger arose from the fact that at least not all men at all times take promises in lieu of performance. One must therefore make at least a down payment in effort at performance. The danger of romantic hope raised by idealistic promises is that no down payment possible to gradualism will suffice in tensional times. One can make, or seem to make, a larger payment through revolutionary means. But revolution to free men from fear and want is always hard on the two positive members of the four freedoms: speech gets censored and conscience is lucky if it does not get suppressed or free worship at least suffer invasion. The means to freedom from want and fear thus tend to cancel out the ends of freedom of expression and worship. Democracy—with gradualism as its means-finds hard sledding where romantic hope runs high.

It must depend, therefore, on a reduction of the demands for amelioration as well as upon an acceleration of the techniques of collectively supplying what men want. Civilization, as Justice Oliver Wendell Holmes suggested, is the reduction of the infinite to the finite.

Parliamentary government is democracy disciplined through sad experience with revolution into an acceptance of only such measure of state-guaranteed security as is compatible with freedoms like those of speech and conscience. Communism is romantic democracy, undisciplined by the inefficiency of haste and the inhumanity of violence. Discipline men must have, but there is an alternative as to whether it will be inner or outer in texture. Men who indulge in such hopes as cannot be fulfilled through education in the rule of consent and through legislation exemplifying the majority principle will at times be driven by their own impetuous hopes into the use of means that may frustrate some if not all of their ends. Men who temper their hopes by the test of humane means will always be postponing some things they want because they cannot get them without sacrificing other things which they need.

The greatest debits which war bequeaths to peace, when judged from such a vantage as that of the four freedoms, are, on the one side, habits of easy resort to means that circumvent humane ends and, on the other side, the projection through suffering of the hopes that cannot be fulfilled by gradual means-or by precipitate ones either. The printing of the four freedoms on the back of occupational currency was abandoned after the first trial. Since total war cannot be won save through heightened and hardened morale, war always begets a romanticism of expectation which peace cannot live up to. It was this enemy of frustrated hope which the world was to meet in the next eventful years. Whether the four freedoms could survive meeting their own psychological consequences was the test of their eventual success. The issues might well be fought out in a form more clear than war allowed: a contest between the two positive freedoms that are "of" and the two negative freedoms that are "from." The two sets could be harmonized only through great (T. V. S.)

Four-H Clubs

See Societies and Associations.

F.P.C.

See Federal Power Commission.

France

France is situated in the west of Europe; bordered on the north by Belgium and Luxembourg, northeast by Germany, east by Germany and Switzerland, southeast by Italy and south by Spain; with the Mediterranean sea on its southeast coast, the Atlantic ocean on the west and the English channel and the North sea to the north. Capital, Paris; government, a constitutional republic; Vincent Auriol, the first president under the constitution adopted in 1946, was elected by the two chambers of parliament Jan. 16, 1947. Area, 212,737 sq.mi.; population (1936 census) 41,907,056 for metropolitan France, but estimated at 2,000,000 less in 1946 in consequence of World War II and postwar deaths resulting directly from the war. Title 8 of the constitution also provided for the establishment of the French union, composed of the French republic and overseas territories or associated states. Language: French; religion: Catholic, c. 1,000,000 Protestants.

The Pre-Munich Nightmare.—On March 7, 1936, a decisive date in prewar history, shortly after the French chamber had ratified its treaty with the soviet union—German troops entered the Rhineland. At the rostrum of the reichstag, Adolf Hitler had declared: "In pursuance of the primitive right which every nation has to safeguard its frontiers and guarantee its means of defense, the German government has re-established the complete sovereignty of the reich over the demilitarized zone."

The French premier replied with a ringing speech which had little effect. France restricted itself to verbal protests and an appeal to the League of Nations; Germany, by a plebiscite on March 29, in which 98.79% of the voters approved Hitler's action, formally confirmed an act which, with popular German consent, was to lead fatally to a new war.

In Spain, meanwhile, the Civil War was complicating an already complex international situation. France, in agreement with the British government, had decided upon nonintervention, but Germany and Italy took the side of Gen. Francisco Franco, and sent the Nationalists troops and materials. The legal government of Spain was abandoned to all intents and purposes; only the soviets, then in the throes of the great "purge," helped the Spanish republic by establishing the so-called international brigades. From this point forward Rome and Berlin acted in solidarity. In Oct. 1936 the axis was born during a visit of Count Galeazzo Ciano, Italian foreign minister and son-in-law of the duce, to Berlin; the two allies together officially recognized the Franco government. Thereafter, the International committee in London was to play only an insignificant and often ridiculous role.

Germany, contrasting the hesitations of England and France with its own resolute will, multiplied its aggressive acts, ended compliance with the Dawes and Young plans, repudiated the clauses of the Treaty of Versailles relating to navigation on internationalized rivers, and increased its military budget. While the French cabinet found itself involved in incessant internal turmoil and King Edward

VIII was abdicating, Hitler, profiting by the confusion of his adversaries, began to look toward Austria. In a series of swift moves (see Austria), he completed the anschluss and proclaimed Austria's annexation on March 15, 1938.

In France, on March 10, 1938, (the day before Germany issued its ultimatum to Austria) Premier Camille Chautemps resigned for reasons hardly known to even his closest associates. Perhaps he felt himself outrun and bypassed by the rapid turn of events. When the second government of Léon Blum was formed on March 13, Austria had been lost. The axis had fortified itself. It was said that Hitler had sent a laconic telegram to Mussolini: "I shall never forget you this."

Joseph Paul-Boncour, the new foreign minister in Paris from March 14 assured Stefan Osusky, the Czech minister to Paris, that France would help his country if it were attacked. In fact, it was Czechoslovakia that Hitler was menacing now.

France had concluded a treaty with that country on Oct. 16, 1925, defining and confirming the one of Jan. 25, 1924. President Eduard Beneš counted not only on the agreements with France but on a treaty of mutual assistance which he had concluded with the soviet union on May 16, 1935, complicated by the fact that when the occasion arose the Russian troops would have to pass through Poland and Rumania, whose attitude had come to be rather doubtful. In France, the Blum cabinet fell on April 8, 1938, and was replaced by a cabinet under Edouard Daladier, with Georges Bonnet as foreign minister.

The drama which was soon to steep the world in blood developed with the logic and the vigour of a classical tragedy. The meeting between Hitler and Neville Chamberlain hardly improved the situation. After his return to London, Chamberlain on Sept. 18 consulted with Daladier and Bonnet, who, according to André François-Poncet, French ambassador to Germany, were agreed to go to war if necessary, but preferred to reach an agreement on the cession of certain Czech Sudeten territories to Germany with the expected consent of the Czech government.

The Czech government accepted the Franco-British proposals on Sept. 21 to cede Germany territories with more than 50% German population; with a guarantee of the new frontiers by France and Great Britain. But Germany demanded still more, and Chamberlain hurried to Godesberg to meet the chancellor again; he found there a categorically stiffened, brutal man.

Justly perturbed, Chamberlain returned to London and there arranged on Sept. 25 for a new meeting with Daladier and Bonnet; Gen. Maurice Gamelin, French chief of the general staff, was also present. All had their backs to the wall.

Munich and Uneasy Peace.—During this critical period, Edouard Herriot had seen Maxim Litvinov, soviet foreign minister, in Geneva, Switzerland, and had had a long talk with him. Both were agreed that only a close agreement among Great Britain, France and the soviet union would serve to prevent Hitler from advancing further. There was only one difficulty: the possible passage of Russian troops through Polish and Rumanian territory. Litvinov thought that France was better qualified than the soviet union to try to solve that problem. Meanwhile, Herriot tried to uphold the courage of the Czechs in frequent meetings with Osusky.

Hitler received Ambassador François-Poncet on Sept. 28

40!

at 11 A.M. The chancellery was in great commotion; mobilization was reported ordered for 3 P.M. A Schutzstaffel (SS) man entered the hall and announced that the Italian ambassador had just arrived with an urgent communication for the chancellor. Hitler left the room and was absent for about a quarter of an hour; when he returned, he said: "Mussolini also asks me to postpone it." At 2:30 P.M., Hermann Goering telephoned François-Poncet that Hitler had proposed a conference for the following day, Sept. 29, at Munich and invited the French premier to take part in it. An hour later the invitation was accepted by Daladier.

During the afternoon of Sept. 29 Mussolini arrived from Italy by railway; Hitler hastened to meet him and entered his carriage at Kufstein. Daladier arrived at the Munich aerodrome at 11:15, accompanied by the acting secretary general and by the French director of political affairs. The conference took place in the fuehrerhaus; it opened at 12:45 and after lunch proceeded to the end of the afternoon. François-Poncet, who took part in it, described the spectacle: Mussolini, sunk into the depths of his easy chair, his face immobile; Hitler upright near him. Germany and Italy hesitated on the question of an international guarantee for the future borders of Czechoslovakia, recalling the claims of Poland and Hungary.

At 1:30 A.M. the following morning the document was signed. The accord provided for the evacuation in four stages of "predominantly German" territories under conditions determined and supervised by an international commission. At 11:30 Chamberlain paid Hitler a visit and, without having informed Daladier (according to François-Poncet), obtained from Hitler a written agreement of nonaggression and friendship.

The Munich agreement, accepted by the Czech government under pressure of circumstances, provoked lively protest. The French chamber, by 535 to 75 voted confidence in Daladier's attitude, which, it must be admitted, had been received with enthusiastic approval by a people that hated war. But the situation remained troubled, and the so-called agreement, fought against by an ardent minority, had not brought any peace to Europe. Polish troops occupied the Teschen area while an autonomous Slovak government was set up under the presidency of Msgr. Josef Tiso, and an arbitrary judgment by Joachim von Ribbentrop and Count Ciano in Vienna gave Hungary approximately 1,000,000 new inhabitants. Europe was disintegrating.

French diplomacy meanwhile tried to obtain from Germany an agreement similar to the one secured by Neville Chamberlain. As France was represented in Rome by only a chargé d'affaires after the departure of the Comte de Chambrun, François-Poncet was sent there as ambassador. He was received by Hitler for the last time on Oct. 18, 1938, not in Berlin or Berchtesgaden, but at a retreat high up in the mountains. Hitler continued his deception, offered to sign a treaty recognizing the existing Franco-German frontiers, accepted the French pact with the U.S.S.R. and ordered Ribbentrop to work out a treaty with his western neighbour.

What was the outcome of this conversation? In Paris on Dec. 6, 1938, Ribbentrop and Bonnet signed a declaration of good neighbourship, solemnly recognizing as final the existing borders between the two countries. "Taking into consideration their relation with third powers," France and Germany agreed "to remain in contact on all questions concerning the two countries, and to consult

mutually in case subsequent developments create the possibility of leading to international disturbances."

Hitler had little regard for this declaration, from the very beginning. On Jan. 30, 1939, speaking before the reichstag and recalling his operations against Austria and Czechoslovakia, he shouted: "In the future we shall not tolerate that the western powers interfere in matters that are no concern of theirs . . . National Socialist Germany and Fascist Italy are strong enough to assure peace against anyone, or to finish with speed and resoluteness any conflict lightly provoked by irresponsible elements." What good was the declaration of Dec. 6? This speech of Jan. 30 enclosed in general assurances of peace a renewed demand for colonies. The new French ambassador in Berlin, Robert Coulondre, quickly realized that if Germany tried to appease the west, it was because that country wanted to be free to move against the east. In principle, the Ribbentrop declaration repeated the proposal that Franz von Papen had made in 1932 at the time of the Lausanne conference. And, as far as central Europe was concerned, Hitler considered it as his private hunting ground. Italy, for its part, denied its assurances of peace with noisy demonstrations for the cession of Nice, Tunisia and Cor-

At Munich, Czechoslovakia had obtained only a respite. When President Emil Hácha dismissed the autonomous Slovak government of Tiso because of its separatist attempts, Tiso appealed to Hitler, who demanded complete independence for Slovakia and the removal of two Czech patriot ministers. The republic's disintegration was rapid; Slovakia and the Carpatho-Ukraine proclaimed their independence. On March 15, Hácha, called to Berlin, placed the destiny of his country in the hands of the fuehrer, "in complete confidence." Hitler entered Prague, installed Konrad Henlein there and on March 16 created the protectorate of Bohemia and Moravia. The governments at Moscow, Paris, London, Washington refused to recognize this coup de force, but too late: Czechoslovakia was dead, with all the liberty, the independent culture, the moral values it stood for. In England and in France. eyes began to open to reality; Poland was the next obvious target.

Stressing his new resistance, Neville Chamberlain declared in the house of commons on March 31, 1939, that in the event of any action menacing the independence of Poland, to which the Polish government judged it vital to offer armed resistance, the British government would hold itself bound to furnish the Polish government with all the assistance in its power. That was straightforward; British policy had been decisively reversed. Hitler, however, replied without delay that he would not be intimidated. The French government meanwhile confirmed its treaty with Poland.

On May 22, 1939, Germany and Italy signed a ten-year treaty known as the "Pact of Steel." Thereafter it was their "Lebensraum," a phrase as dangerous as it was vague, which the two accomplices agreed to defend.

What was France to do? Bonnet had warned Ambassador Johannes von Welczeck that any attack against Poland would provoke French intervention. Ribbentrop wrote personally to Bonnet on July 13 that Germany would never admit "intervention in its own sphere of interests . . . if we have reached the point where the French government wants war, Germany will stand ready at any moment." Bonnet replied on July 21: "France ardently wants peace; no one can doubt that. No one can doubt any longer the resolution of the French government to keep its agreements. But I shall not let it be said that our

honoured its signature."

The situation got worse day by day. On Aug. 23, the nonaggression pact between the soviet union and Germany was signed in Moscow-a veritable thunderbolt. The French General Joseph Doumenc and the British Admiral Sir Reginald Plunkett had gone to Russia to negotiate a military agreement which according to Vyacheslav Molotov was to precede a political accord. Now all hope of an accord with the U.S.S.R. seemed lost. Nothing could stop the tempest. The sending of plenipotentiaries and the exchange of notes were nothing but manoeuvres.

Fatal First of September.-In vain Mussolini had offered at the last moment to call an international conference. On Sept. 1, at 5:45 A.M., the German army invaded Poland without a declaration of war. The die was cast. Hitler declared in the reichstag that "Germany's western border is final," but that Russia and Germany intended to pursue a joint policy.

France mobilized; England introduced conscription of all men between 18 and 41. The French parliament voted for 69,000,000,000 francs in military credits. On Sept. 3, 1939, France and Great Britain were in a state of war with Germany.

During the rest of 1939, except for a small operation in the forest of Warndt, France remained on the defensive. During this period of military stagnation, France was gravely disturbed by internal developments. The Daladier cabinet, reorganized in Sept., dissolved the Communist organizations, thus provoking hatreds which survived the war; obtained full powers and the right to rule by decree; and promulgated a law regarding the expulsion of the Communist deputies who had not broken their relations with the Third International. But it was forced to resign after a vote of no confidence passed by the chamber in secret session. Paul Reynaud now formed a government

Parisians evacuating the French capital in late August 1939, as war clouds gathered in intensity over the European continent

in which Daladier retained the portfolio of war; and France and Great Britain made an agreement on March 28, 1940, not to conclude a separate peace or armistice.

After the German invasion of Norway and Denmark on April 9, 1940, British and French troops sought vainly by their landing at Narvik to counter the German attack. But the operations of the reich in the north were only preliminary actions.

On May 10, Belgium, the Netherlands and Luxembourg were also invaded simultaneously. France and Great Britain sent aid immediately, but again in vain; the French front was pierced at Sedan.

Invasion of France.-German armoured divisions advanced rapidly through the breach they had opened between Namur and Sedan. The Dutch army laid down its arms, and the Belgians, British and French retreated rapidly, fighting against hopeless odds.

At one o'clock in the morning of May 16, 1940, Generalissimo Gamelin made it known that two German armoured divisions might enter the capital that very evening. The military governor of Paris demanded in writing the departure of the government and parliament, which made their dispositions accordingly. Reynaud included the president of the senate and Herriot in the cabinet so that they could discuss the situation together with his ministers. It was in the course of this discussion that the archives of the ministry of foreign affairs were thrown into the garden from an upper story to be burned.

During the day the news became slightly better. Daladier announced that the advance of German armour had not been confirmed. But parliament had suddenly realized the tragic turn of the situation. Paul Reynaud reformed his cabinet and called in Marshal Henri Philippe Pétain as minister of state and vice-premier. Gen. Maxime Weygand was named commander in chief of all the thea-



tres of operations. A counteroffensive ordered by Gamelin failed.

The German army was advancing on Abbeville, Péronne and Cambrai, which it occupied, then on Amiens and Arras, then on St. Pol and Boulogne, then on Calais. It had taken the route toward the sea. On May 28, King Leopold capitulated against the will of his government, which disavowed the surrender. From then on, French defeat assumed the dimensions of a disaster. While the Franco-British army embarked at Dunkirk, and while the Reynaud government was newly reorganized after the departure of Daladier, the fronts which Weygand had tried to establish collapsed one by one. The Germans occupied Rouen and Villers-Cotterets. The government was transferred to Tours.

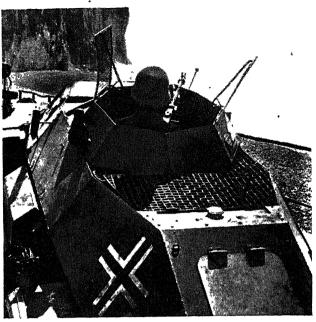
It was at Tours, on June 10, that the government learned of the Italian declaration of war against France and England. The idea of an armistice began to be discussed. Proposed by Pétain and Weygand, it came to light in the cabinet meeting which followed the meeting of the supreme council in which Winston Churchill, Anthony Eden and Clement Attlee had taken part. Paul Reynaud refused. On June 13, the Franco-British supreme council met at Tours; in a small room in the prefecture Winston Churchill wept bitter tears and showed thereby that his heart was as great as his will power. Meanwhile the German army had entered Paris (June 14). The next day, the French government installed itself in Bordeaux. Pétain and Weygand continued to press for an armistice more strongly every day. Chautemps proposed to ask Germany for its conditions with the reservation of refusing them if they were too hard.

Armistice.—In Bordeaux the drama unfolded itself rapidly. Jules Jeanneney, president of the senate, and Edouard Herriot, president of the chamber of deputies, demanded the departure of the government for Algeria. On June 16 there were two successive meetings of the cabinet, one in the morning and one in the afternoon. Churchill submitted to the French government his proposal of a union of England and France. President Roosevelt assured the Allies of his help as long as they would continue their resistance, but did not enter into any agreements of a military nature. Paul Reynaud, placed in the minority, submitted his resignation.

In spite of the suggestion of President Albert Lebrun, Reynaud refused to ask for even a conditional armistice. Jeanneney and Herriot gave him aid by refusing to suggest any other name but his own as successor. On leaving the presidential office, they met in the antechamber a certain number of ministers of the next cabinet, assembled as for a ceremony. Among them was Adm. Jean Darlan, who the night before, in the admiralty building at Bordeaux, had announced to Herriot his resolution of leaving with the fleet if there was talk of an armistice. He had changed his mind and told Herriot now: "A government that leaves never comes back." During the night the Pétain government was formed with Chautemps as vice-premier; Weygand as minister of national defense; Charles Pomaret as minister of the interior; and some others. The foreign minister, Paul Baudouin, was ordered to ask Hitler through the Spanish ambassador for his armistice conditions.

In the meantime the Germans occupied Metz, Dijon, Besançon, Le Creusot and Orléans.

June 17 was an especially dramatic day. Toward noon Pétain announced over the radio to France that he "had



German tank patrolling the channel coast of France during 1940

made it the gift of his person," a phrase often repeated, and that it was necessary "to try to end the struggle." He immediately rectified the latter phrase when Churchill took it up, and, on the contrary, affirmed his will to carry on the fight.

The German army continued its advance across France. On June 18 Gen. Charles de Gaulle made a radio appeal which was the first sign of resistance. He not only raised the courage of the French, but prophesied the future. "Overwhelmed today by mechanical forces, we can be victorious in the future through superior mechanical forces.

The destiny of the world rests in this." On the same day in Bordeaux, Jeanneney and Herriot issued a declaration of the same kind, in the following letter to the president of the republic:

Bordeaux, June 18, 1940.

The President of the Republic:

Yesterday we had the great satisfaction of hearing Marshal Pétain and Minister Baudouin declare that they would accept no propositions which do not respect the laws of honour.

In these hours, when events follow each other so rapidly that they threaten to swamp us, we wish to confirm what we told you yesterday; under no considerations will we conceive of a separate peace as compatible with the honour of France. Such a peace would violate our treaties with Great Britain and Poland, gravely compromise our relations with the United States, ruin our prestige in the world, especially with the people who have joined their fortunes to ours, and, in fact, by the surrender or even the immobilization of our fleet, reinforce our enemies' means of attack against our allies.

We cannot doubt that the government will interpret its own statements in the same way as we do....

At the same time, Jeanneney and Herriot continued their efforts to persuade the government to depart for Algeria. At 5 P.M. on that same June 18, they urged the president of the republic not to let the state be made a prisoner in his person. Albert Lebrun stated that he agreed, but that he submitted himself to the will of the marshal, who did not want to leave the country. He advised them to go and see Pétain, but the two insisted that the marshal come to confer with them. The marshal came; he confirmed that he wished to stay among his fellow citizens, to place at their service the influence he knew

he exerted over the Germans. Herriot replied that a compromise could be found: the marshal could stay and delegate his powers to his vice-premier. Chautemps, who would take with him the ministers of his choice to form a government. Pétain accepted; he even said spontaneously that in order to prevent the departing ministers from appearing to be fleeing the country, he would give them the order to leave.

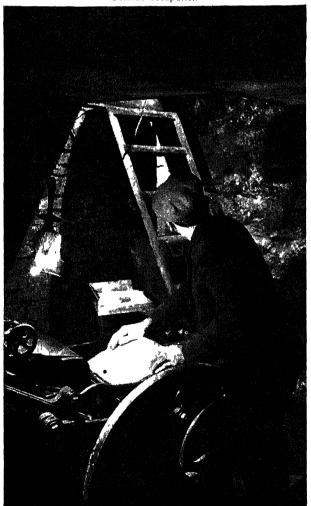
They were to organize in North Africa. Thereupon Jeanneney and Herriot believed that the question was well settled by this formal agreement.

On June 18, Pétain expressly accepted, before the president of the republic and the presidents of the two chambers, the departure of the government with the exception of his own person. But Pétain, urged on by Pierre Laval, postponed the execution of his promises in order to evade them.

On June 19 the Germans crossed the Loire, and Hitler demanded the dispatch of plenipotentiaries, Pétain appointed Generals Charles Huntziger, Parisot, Jean Bergeret, Rear Adm. Le Luc and Ambassador Léon Noel.

As a reward for their collaboration and their actions, Laval and the mayor of Bordeaux, Adrien Marquet, were named ministers of state. Hitler, accompanied by Goering, handed the French plenipotentiaries his conditions, in the same carriage in which the Armistice had been signed in

Individual French resistance, later organized through the F.F.I. dated from the entry of German troops onto French soil in 1940. This picture shows an underground press in operation during the German occupation



1918. The armistice was signed on June 22 at 6.35 P.M. in the forest of Compiègne. Two days later the armistice with Italy was signed.

The Coup d'Etat at Vichy.—On July 2, 1940, the government-the pseudogovernment-of France installed itself in Vichy. The British ambassador, Sir Ronald Campbell, had left Bordeaux on June 23; diplomatic relations between France and Great Britain had been broken off. Proudly the English government refused to negotiate and continued the struggle in spite of the aerial attacks on London, in spite of the bombing of Coventry. From the French point of view, the most important event was the one which was to permit Pétain to establish his dictator-

On July 10 the national assembly, convoked at Vichy, voted 569 against 80, with 18 abstentions (667 members present out of a legal total of 850) for a single article giving full powers to the government of the republic under the authority and signature of Marshal Pétain, to the effect of promulgating by one or several acts a new constitution for the French state. This constitution was to guarantee the rights of "Work, Family and Country"; it was to be ratified by the nation and applied by the assem-

blies created under its provisions.

The evening before, on July 9, Laval had shown Herriot the text of the proposal which he intended to present. The only article of this proposal ended with the following phrase regarding the constitution: "It will be ratified by the assemblies created under its provisions." This text was infinitely dangerous for the republic; it permitted Pétain to have this constitution ratified at once by assemblies under his control. The former servicemen's group of the senate had denounced that peril. Herriot fought during the whole evening of the 9th to effect a change. After a bitter discussion, he obtained from Laval the modification which ordered the ratification "by the nation."

In Herriot's view, good republicans were able to vote for the text of July 10 in the belief that they were not prejudicing the regime, for the assignment was given only to "the government of the republic."

It was Pétain (and not the assembly) who engineered the coup d'état, because he promulgated his three "constitutional acts" on July 11; the first read: "We, Philippe Pétain, Marshal of France, having taken cognizance of the Constitutional Law of July 10, 1940, declare that we assume the functions of Chief of the French State. Consequently we declare: Article two of the Constitutional Law of February 29, 1875, is abrogated." Nothing in the law of July 10 authorized Pétain to dispossess President Lebrun and to "assume the functions of Chief of the French State." The second act read:

(Article 1. Paragraph 1) The Chief of the French State has full governmental powers; he nominates and recalls the Ministers and Secretaries of State who are responsible to him only. (Paragraph 2) He exercises the legislative power in council with his Ministers: (1) until the formation of new Assemblies; (2) after their formation, in case of grave external tension or internal crisis, by his decision alone and in the same form. Under these same conditions he is entitled to make all dispositions of a budgetary and fiscal nature. (Paragraph 3) He promulgates all laws and attends to their execution. (Paragraph 4) He nominates all civil and military officials for whom the law has not laid down another mode of selection. (Paragraph 5) He controls the armed forces. (Paragraph 6) He holds the right of pardon and amnesty. (Paragraph 7) The envoys and ambassadors of foreign powers are accredited to him; he negotiates and ratifies all treaties. (Paragraph 8) He is entitled to declare a state of siege in one or more sections of the territory. (Paragraph 9) He cannot declare



Stigmatized by shaven heads, French women collaborationists were followed by a jeering crowd down a street in Chartres after the city's liberation by the Allies, Aug. 17, 1944

war without the previous consent of the legislative assemblies. (Atticle 2) All provisions of the constitutional laws of February 24 and 29, and July 16, 1875, are abrogated as being incompatible with the present Act.

It was Pétain therefore who, on his own initiative and without the consent of parliament, destroyed the constitutional laws of 1875. His acts were illegal; it sufficed to state this in order to re-establish these laws, with the reservation of modifying them at once by legal procedure.

Act no. 3 maintained the senate and the chamber but adjourned them; they were not allowed to meet again except when convoked by the chief of state.

On July 12, a new government was nominated with Laval as vice-premier; Raphael Alibert, justice; Marquet, interior; Baudouin, foreign affairs; Marcel Bouthillier, finance; Gen. Weygand, national defense; Adm. Darlan, navy; Francois Pietri, communications.

Despotism.—After the coup d'état of July 15, President Lebrun left Vichy. A new supreme court of justice was created, and Gen. de Gaulle was condemned to death in absentia as a deserter. Secret societies were dissolved; Gen. Weygand was sent to North Africa as the delegate in chief of the government. Daladier, Reynaud, Gamelin and Georges Mandel were interned at Chazeron in the Puy de Dome. Herriot was dismissed as mayor of Lyons.

Pétain no longer hid his plans. In an article entitled "Politics of the Future" in the Revue de Deux Mondes, he dared write: "We have less difficulty in accepting the National-Socialist idea of the pre-eminence of work and of its essential reality in connection with the fiction of monetary conventions as it has formed part of our classical tradition." And Laval stated in the Belgian journal La Legion: "The Republic has ceased to exist in France."

Thenceforth, acts of brutality were to follow each other: the impeachment of Daladier and Gamelin before the court of Riom; the internment of many Frenchmen in Pellevoisin; the laws against the Jews; the accusations against Blum, Mandel and Reynaud; the appointment of Laval as foreign minister; dissolution of the general labour union; the arrest of Léon Jouhaux. On Dec. 13, 1940, an unexpected development surprised the people: Pierre Laval was dismissed and replaced by Pierre-Etienne Flandin, while Ferdinand de Brinon was appointed delegate general of the government in the occupied territory.

The official journal of the French republic became the journal of the French state. A national council was created (this should, under the Jeanneney-Herriot precautions, have ratified the constitutional acts). The "Rassemblement National Populaire" (Popular National Movement) united the principal collaborators around Eugene Deloncle, Marcel Déat, Charles Spinasse, Marquet, Pierre Cathala, Jean Luchaire, Georges Suarez. A new constitutional act made Adm. Darlan the deputy and possible successor of Pétain. One thing could not be doubted: the members of the "Rassemblement National" wanted to achieve "the integration of France into Europe and in the National Revolution." The system of Hitler triumphed; it pursued with tenacity the adherents of De Gaulle.

The Vichy police arrested foreign Jews in great numbers, and fought, as well as it could, against clandestine radio broadcasts which sustained the courage of the patriots. Darlan and Marcel Déat continued to praise totalitarian government; Weygand became governor general of Algeria while Pierre Pucheu was made minister of the interior. Marx Dormoy, the mayor of Montluçon who had been dismissed the same time as Herriot, was assasinated at Montélimar. Pétain himself was forced meanwhile to acknowledge in his speeches the existence of an opposition, still mute, which was rising in different parts of the country. In June 1941 Hitler had attacked the soviet union, and Vichy had broken off diplomatic relations with that country. At home, Germany forced upon

France measures against the Communists, and Minister Pucheu obeyed them; some militant ones were put to death.

After having suppressed parliamentary inviolability, Pétain forced officials to give an oath of fidelity and created the state tribunal. In Feb. 1942 the trial of Gamelin, Daladier, Léon Blum, Guy La Chambre and Pierre Jacomet began before the court of justice at Riom, it was suspended, apparently, by German orders. Pétain now declared himself to be in complete accord with Laval, for whom he created the title of "chief of government." Together they followed "the organization of Europe," that is to say, Hitler's plans. The resistance, however, grew in strength from day to day. Pétain realized it and admitted it in his message of June 17, 1942: "I am under no illusion as to the weak response which I have received to my appeals." And even Laval let his disappointment be known.

Jeanneney and Herriot had succeeded in making the offices of the two chambers of parliament function in spite of all difficulties. On Aug. 29, however, Pétain suspended them.

Allied Landing in North Africa.—French patriots did not have to wait long for the reward for their faithfulness. On Nov. 8, 1942, Allied forces landed in North Africa, and the Germans, breaking the armistice agreement, invaded the unoccupied zone of France. Prime Minister Laval saw his powers increased. The French fleet scuttled itself. The French militia was formed with Joseph Darnand as its head. A law creating compulsory labour service sent many young Frenchmen to Germany. Blum, Daladier, Reynaud, Mandel and Herriot were handed over to German authorities.

While these events were developing in the interior, what was the attitude of the Vichy government with regard to external affairs? It had held the Montoire meeting of Sept. 1940, and the principles of "collaboration" had been laid down officially. On June 22, 1942, a day of shame, Pierre Laval brazenly declared: "I wish for the victory of Germany." To this he added on Dec. 13: "An American victory would mean a victory for the Jews and Communists."

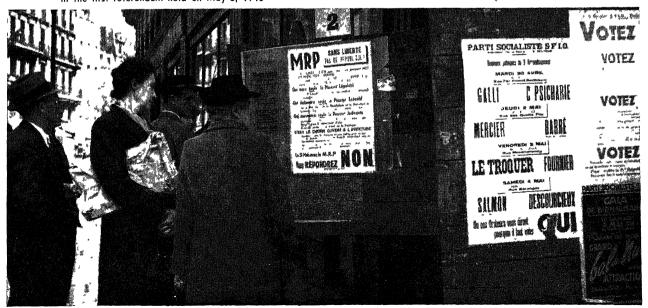
French citizens scanning posters in which they were urged by the Popular Republicans (M.R.P.) to vote against, and by the Socialists to vote for, a proposed new constitution, later narrowly defeated in the first referendum held on May 5, 1946

After the appeal of Gen. de Gaulle on June 18, 1940, the French resistance had never stopped increasing. The head of the Free French had concluded agreements with Churchill regarding volunteers. The New Hebrides, the Ivory Coast, the Chad, the Camerouns, Tahiti, Gabun joined De Gaulle; the battle in the Levant began. A French Committee of National Liberation was set up.

The Anglo-U.S. landing in North Africa raised the courage of all. The resistance continued to grow, after the assassination of Darlan in Algiers and the conference of Casablanca. In Feb. 1943 the armies in North Africa rejoined those of Gen. Jacques Leclerc at Ghadamés. Tunisia was liberated. In June the French Committee of National Liberation was set up in Algiers, with the task of "exercising French sovereignty over all the territories placed outside the power of the enemy." "Liberation first, liberty afterwards," proclaimed De Gaulle. The fall of Mussolini was an unmistakable portent of the defeat of the axis. Italy capitulated, and French troops disembarked in Corsica. A provisional consultative assembly was created; its first session opened at Algiers in Nov. 1943.

Landing in Normandy.—On June 6, 1944, the Allies landed on the coast of Normandy, and shortly thereafter liberated Bayeux, Isigny, Carentan, Cherbourg, Caen, Coutances and later Vaumas, Saint Briac, Quimper, Le Mans, Nantes, Angers. On Aug. 24 at 9.30 P.M. the advance elements of Leclerc's armoured division arrived at Paris. On Aug. 25 at 7.30 P.M. Paris was liberated. Laval had come himself to see Herriot at Nancy, where the latter was interned, to take him to Paris to be interned in the city hall. What was his idea? He only hinted at it. It seemed that he wanted to convoke the national assembly, hand it his resignation and permit Herriot to take his place. But Herriot refused to be associated with him in any way, and under Hitler's orders (as Laval said at the trial of Pétain), Herriot was sent eastward toward Germany.

From then on, events moved rapidly. On Aug. 19, 1944, the Allies landed on the coast of Provence. On Sept. 13, the northern armies met those of the south in the region of Dijon. The battle of the Rhine began. In spite of Laval's prediction, the German army was defeated. The



412 Laval government had left Paris on Aug. 17, thus preceding the Parisian uprising and the liberation by a few days.

Gen. de Gaulle was now installed in Paris. "France," he said, "comes home again." The consultative assembly returned from Algiers; De Gaulle formed his government and announced the re-establishment of the legality of the republic. A decision of the cabinet fixed the dates for the elections to the municipal and general councils; the court of justice was organized. In Dec. 1944 Gen. de Gaulle travelled to Moscow to sign a treaty of alliance and mutual aid with the soviet union.

Fourth Republic.—The problem after liberation was one of national reorganization. Political trials followed each other; Pétain was condemned to death, but his sentence was commuted by Gen. de Gaulle to forced labour for life. Laval, Suarez, Darnand, Luchaire were executed.

Two solutions were advanced to the political problem of the new fourth republic. In the opinion of some, it was sufficient to annul the constitutional acts of Pétain, to hold elections for the two chambers and to revise the constitutional laws of 1875. After some hesitation, Gen. de Gaulle preferred to submit to a popular referendum an electoral law founded on proportional representation and a new constitution.

Fr	ance: Statistical Data, 1938	A
Item	Value (000's omitted)	Amount or Number
Exchange rate United States	•	1 franc = 2.87 cents 178.75 francs =£1
Finance Government revenues Government expenditures Gold reserves National debt	. \$1,562,000 (£319,493) . 1,837,000 (£375,741) . 2,512,000 (£513,807) . 11,916,000 (£2,437,308)	
Transportation Railroads	:	26,427 mi. 393,761 mi.* 40,563 mi.*
Communication Telephones	:	1,589,595 4,705,859
Minerals Potash	•	3,720,054 tons 36,526,915 tons 51,254,745 tons 49,934 tons 752,254 tons
Crops Fodder beets	:	38,020,973 tons 19,085,884 tons 12,894,264 tons 11,863,283 tons 10,240,587 tons
Livestock Cattle	: :	15,621,680 9,872,360 7,126,720 2,692,140
Sea products Cod	:	72,214 tons 42,229 tons 16,024 tons 71,299 tons
Exports—total Iron and steel	. 880,288 (£180,055) . 56,083 (£11,471) . 43,116 (£8,819) . 41,264 (£8,440) . 32,984 (£6,747)	29,747,000 tons 1,761,000 tons 65,000 tons 52,000 tons 377,000 tons
Imports—total Coal and coal products	. 1,323,384 (£270,686) . 140,092 (£28,655) . 109,630 (£22,424) . 94,931 (£19,417) . 82,580 (£16,891)	51,979,000 tons 24,361,000 tons 8,275,000 tons 495,696,000 gal. 266,000 tons
Defense Standing army personnel Reserves Standing navy personnel Standing air force personnel Reserves Military expenditures	:	725,759 5,300,000 74,430 64,650 6,220
Education Elementary schools Students	: : :	81,000 4,900,000 546 270,000

In the elections of Oct. 31, 1945, the second solution triumphed, largely because of the newly-granted suffrage to women. The elections gave a majority of seats to three parties which promptly called themselves the "Big Three," and which combined to form a government under the leadership of Gen. de Gaulle: the Communist party, with Maurice Thorez as secretary general; the Socialist party, whose leader, who did not stand for election, was Léon Blum; and the so-called Mouvement Républicain Populaire (Popular Republicans) with Maurice Schumann as its leader (his voice had so often been heard over the English radio during the German occupation). This new party had no strictly outlined program; it was attached to the Christian Democratic movement, and was supported by the Catholic Church. The Big Three voted for the nationalization of banks, gas and electricity. They worked out a constitution based on the rule of a single assembly, reducing the president of the republic to an insignificant place and subordinating the judicial power to the politi-

The first constituent assembly was only provisional. Gen. de Gaulle suddenly retired on Jan. 21, 1946, and was succeeded by Félix Gouin, who subsequently was elected president. The proposed constitution was rejected by the French people by a majority of 1,200,000 votes. (See Elections.)

The second constituent assembly, elected on June 2 in the same fashion as the first one, returned the Big Three to power in spite of a small advance of the minor parties; Georges Bidault, leader of the M.R.P., was named premier to head the three-power coalition. It went to work once more on a new draft, which was approved by a majority of about 1,000,000 votes on Oct. 13 and thus became the fundamental law of the fourth republic. At the national elections of Nov. 10, 1946, the Communists emerged as the most powerful French party, with M.R.P. a close second and the Socialists third. Bidault resigned as premier in December and was succeeded by Léon Blum. (See also Communism; French Colonial Empire; International Law; Socialism; World War II.)

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France, Free (Fighting France)

See France; French Colonial Empire.

Franco, Francisco

Franco (1892—), Spanish soldier and statesman, was born Dec. 4, 1892, at El Ferrol, Galicia, and was graduated from the military academy of Toledo in 1910. After a period of military service in Morocco, he served as director of the military academy at Saragossa, Spain, from 1928 to 1931; when the new republican government dissolved the promonarchist academy, Franco went into semibanishment. He returned to politics with the victory of the right in the elections of Nov.-Dec. 1933; it was he who was responsible for the use of Moroccan troops in the suppression of the general strike of Oct. 1934. In

1935 he was appointed army chief of staff by Gil Robles, minister of war.

Franco played a prominent part in the early days of the Spanish civil war (1936-39) in organizing and transporting Moroccan troops to Spain. Following the death of Gen. José Sanjurjo in July 1936, he became the military and civil leader of the rebels. After a bitter threeyear struggle, in which he received considerable aid in the form of men and matériel from Adolf Hitler and Benito Mussolini, Franco defeated the Loyalists in 1939 and emerged as the caudillo (leader) and prime minister of Spain. During the first years of World War II, when the axis was victorious, Franco affirmed Spain's solidarity with Germany and Italy in the struggle against "bolshevism." When Allied arms began to triumph he hastened to profess his neutrality and denied that Spain had been fascist or secretly allied with the axis powers. In 1945, following the collapse of Germany, he claimed that Spain was not a dictatorship. To support this claim, he issued, on Oct. 22, a "bill of rights" which included freedom of worship and expression and the right to petition, provided, however, that these liberties did not run counter to the "fundamentals of the state." In June 1946, in spite of Franco's protestations of peaceful and democratic intentions, his regime came up for consideration before the United Nations organization as a potential threat to world peace. (See also Spain.)

Frank, Hans

Frank (1900–1946), German jurist and politician, was born May 3, 1900, in Karlsruhe. A student of economics and jurisprudence, he studied at the Universities of Munich, Vienna and Kiel and received his doctor's degree from the latter institution in 1924. He afterward taught law and maintained a practice in Munich. In 1930, he joined the nazi party, becoming a member of the directorate, and later became reichstag president and commissioner of justice in the nazi administration. In 1933, he was named Bavarian state minister of justice. Through his office of president of the Academy for German Law, Dr. Frank made adjustments in German law to fit the needs of naziism.

After the collapse of Poland, Frank was appointed supreme chief of Poland's civil administration attached to the staff of Marshal von Rundstedt. In 1942, the Polish government in exile charged that Frank had ordered the execution of 200,000 Poles, suppression of Polish citizenship, confiscation of Polish property, enslavement of hundreds of thousands of Polish workers shipped to Germany, and herding all remaining Jews into ghettos.

Frank was captured by U.S. army troops in Berchtesgaden on May 4, 1945, and was indicted for trial as a war criminal before the International Military tribunal at Nuernberg. The court's verdict corroborated the previous charges made by the London Poles and in addition revealed that Frank had intended to reduce the Poles to slave status. He was further held responsible for the ghettos and the brutal extermination of the Jews. Found guilty by the court of war crimes and crimes against humanity, he was sentenced to hang. Sentence was carried out Oct. 16, 1946, at Nuernberg, Germany.

Frank, Karl Hermann

Frank (1898–1946), German politician, was a bookseller before he turned to politics as Sudeten "irredentist," agitating for the return of the German-speaking provinces of Czechoslovakia to the reich. Rising to the Sudeten party directorate, he represented it in the Czecho-

slovak parliament from 1935 to 1938. After Adolf Hitler annexed the Sudetenland following the Munich agreement of Sept. 1938, the party was absorbed by the nazis and the following year, Frank was named state secretary to the reich protector for Bohemia and Moravia, and concurrently held the rank of minister. After Reinhardt Heydrich, reich protector of Bohemia and Moravia, was assassinated by Czechoslovak patriots in 1942, Frank ordered the execution of the male population of the villages of Lidice and Lezáky. He surrendered to the U.S. army near Pilsen, Czechoslovakia, May 9, 1945. Questioned at Wiesbaden, Germany, he admitted signing the decree ordering the execution of all persons (together with their families) who assisted in the attempt on Heydrich's life, or who failed to report the identity or whereabouts of the assassins. He stated that on the same day, he had received instructions from Hitler's headquarters to execute 30,000 to 40,000 politically suspect Czechs as a reprisal for the slaying. Frank insisted that he flew to Berchtesgaden to protest the order and that while he was in Berlin the massacre of Lidice was carried out by a special execution company sent from Berlin. Convicted by a people's court in Prague for the Lidice massacre as well as for other war crimes, he was hanged in the Pankrac prison courtyard, May 22, 1946.

Frankfurter, Felix

Frankfurter (1882-), U.S. jurist, was born in Vienna on Nov. 15, 1882, and emigrated with his family to the U.S. as a child in 1894. He graduated from the College of the City of New York in 1902 and was granted his degree of bachelor of law with highest honours from Harvard four years later. After completing his legal education he became assistant to Henry L. Stimson, then U. S. attorney for the southern district of N.Y., and enthusiastically joined the "trust-busting" campaign of Theodore Roosevelt, helping to prosecute several large corporations. In 1911 he was appointed a law officer in the bureau of insular affairs in Washington, D.C., and remained there for three years until he was offered a professorship of administrative law at Harvard in 1914. Except for various leaves of absence he remained on Harvard's faculty thereafter. During World War I he was assistant to Secretary of War Newton D. Baker, assistant also to the secretary of labour, counsel for the president's Mediation commission, and chairman of the War Labour Policies board. At the Paris peace conference in 1919 he represented the Zionist cause.

During his legal career he supported labour legislation and the principle of government initiation of social welfare projects. He was also active in cases involving the infringement of civil liberties, publicly associating himself, for example, with the defense in the Sacco-Vanzetti case of 1926. A member of President Franklin D. Roosevelt's "brain-trust," he was appointed associate justice of the supreme court on Jan. 5, 1939, to fill the vacancy caused by the death of Benjamin N. Cardozo.

Fraser, Baron

Lord Fraser (1888-), British naval officer, was the son of an army general. Educated at Bradfield, he later joined the royal navy and was a gunnery officer in World War I. In 1926 he constructed an improved firecontrol table which provided for greater accuracy in longrange firing. He was a flag captain in the East Indies and then was assigned to the battleship "Warspite" as chief

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of staff of the Mediterranean fleet. Fraser was third sea lord and controller in the admiralty from 1939 to 1942, having been promoted to vice-admiral in May 1940. He was second in command of the British home fleet in 1942 and commander in chief of the home fleet in 1943–44. In 1944, he was promoted to the rank of full admiral and given command of the British eastern fleet based at Ceylon, the force which assisted the land operations of Lord Louis Mountbatten's troops in the Burma-India theatre. When the British Pacific fleet was formed in Dec. 1944, he was chosen as its commander in chief. Units of this force joined the U.S. fifth fleet in attacks against the Ryukyus and the Tokyo area in the spring and summer of 1945.

At the surrender ceremonies aboard the U.S.S. "Missouri," he represented the United Kingdom and signed the Japanese surrender document on Sept. 2, 1945, which formally ended World War II. On Jan. 1, 1946, he was created a baron.

Fraser, Peter

Fraser (1884—), New Zealand statesman, was born in Fearn, Ross-shire, Scotland, and went to New Zealand in 1910. He worked as a longshoreman, became interested in trade unionism and joined the New Zealand Labour party. He was elected to the New Zealand house of representatives in 1918 as a Labour member. In 1935 he was appointed to the government as minister of health, education and marine.

Fraser became deputy prime minister in 1939 and prime minister the following year.

During World War II Fraser made frequent trips to Australia, Britain and the United States for consultations with other Allied leaders on strategy and related problems. In 1944 as the issue of the final disposition of the Pacific bases began to occupy the attention of Allied diplomats, Fraser urged Secretary of State Cordell Hull to call a conference of the Southwest Pacific powers to discuss the issue. Fraser represented his government at the United Nations conference in San Francisco, Calif., in 1945, and joined the smaller powers opposing the big-power veto. At the U.N. assembly sessions in London in early Jan. 1946 Fraser reiterated his opposition to the veto and expressed his conviction that it could not endure. On Jan. 18, 1946, he spoke against the proposal to put the atomic commission under control of the security council instead of under the jurisdiction of the general assembly.

Fredendall, Lloyd R.

Fredendall (1883—), U.S. army officer, was born Dec. 28, 1883, in Wyoming. A cadet at the U.S. Military academy, 1901–02 and 1902–03, he was commissioned a second lieutenant of infantry in 1907. During World War I he served as Gen. John Pershing's staff assistant. In 1942 he was placed in command of the U.S. 2nd army corps in North Africa until he was replaced by Gen. George Patton during the Tunisian campaign. On his return to the U.S. he was made commander of the second army at Memphis, Tenn., replacing Gen. Ben Lear. On May 27, 1943, he was promoted to the rank of lieutenant general. Until Jan. 1944, when his position was abolished as the result of consolidation with the eastern defense command, he was also commanding general of the central defense command.

Free France (Fighting France)

See France; French Colonial Empire.

Freemasonry

See Societies and Associations.

Freer Gallery of Art

See Smithsonian Institution.

French Academy

After having brought out the eighth edition of its Dictionnaire de l'usage (Paris, 1935) on the third centenary of its foundation, the French academy undertook the preparation of a new edition. Although in the course of five years three permanent secretaries died (René Doumic in 1937, Georges Goyau in 1940, and André Bellessort in 1942) and a fourth (Georges Duhamel) resigned at the beginning of 1946, work on the dictionary went forward without delay.

During the German occupation of France, the academy voluntarily denied itself any form of public expression, although at all times it discreetly showed its firm intention of having nothing to do with the Germans. It suspended all its publications and abandoned all attempts to fill the gaps in its ranks occasioned by the death of Henri Lavedan (Sept. 3, 1940), Henri Bergson (Jan. 1, 1941), Marcel Prévost (April 8, 1941), Louis Bertrand (Dec. 6, 1941), Émile Picard (Dec. 11, 1941), Edouard Estaunié (April 2, 1942), Cardinal Baudrillart (May 19, 1942), Marshal Franchet d'Espérey (July 3, 1942), Louis Gillet (July 1, 1943), Gabriel Hanotaux (April 11, 1944) and Paul Hazard (April 12, 1944): in this way it avoided the customary reception ceremony which would have risked bringing to the academy representatives of the German authorities

The reserved attitude of the academy during the occupation was often misunderstood and attacked. In fact, the academy lent its secret support to French resistance, at the same time helping many victims of the occupation and aiding writers who refused to publish under the German regime. It was the academy which, in 1942 and 1943, on All Saints' day caused wreaths to be laid at the cemetery of Ivry on the graves of those shot for political reasons.

During the occupation the academy was able in spite of difficulties to bestow all its prizes for literary productions, as well as those for acts of courage and devotion. Between 1941 and 1945 it awarded prizes to 173 writers held as prisoners of war in Germany. For the names of the successive holders of its principal literary prizes, see LITERARY PRIZES.

After the liberation the academy resumed its elections, making every endeavour to attain the 40 members ruled by its founder in 1635, after being reduced to nearly half that number by 1944. On Oct. 12, 1944, Prince Louis de Broglie, André Siegfried and Pastor Vallery-Radot were elected. New vacancies were created within the academy after the winter of 1944 by the death of Maurice Paléologue (Nov. 18, 1944), Maurice Donnay (March 31, 1945), Paul Valéry (July 20, 1945), Joseph de Pesquidoux (March 16, 1946) and Octave Aubry (March 27, 1946). Furthermore, the academy severed connections with Abel Bonnard, Abel Hermant, Charles Maurras and Marshal Philippe Pétain for their roles during the occupation. Between Jan. 1, 1945, and June 30, 1946, the following elections were made: Edouard Le Roy, Emile Henriot, Jean Tharaud, Baron Ernest Seillière, René Grousset, Robert d'Harcourt, Octave Aubry, Paul Claudel, Maurice Garçon, Count Charles de Chambrun, Marcel Pagnol, Henri Mondor and Jules Romains. On July 1, 1946, five seats remained vacant. (H. DE M.)

French Colonial Empire

Metropolitan France with its overseas dependencies formed, in 1937, the French empire. The words "French empire" may convey a wrong idea of the part played by France toward the peoples grouped under its flag; nevertheless, they were current usage throughout the decade 1937–46 and are, for that reason, being used here.

French overseas territories are to be found in Africa, Asia, Oceania and America. Their area in 1937 comprised 4,683,625 sq.mi., that is to say, more than 22 times that of France. Their total population then amounted to 70,000,000 inhabitants. Beginning with Africa and continuing around the world eastward, Table I, valid for 1937, summarizes statistics of populations and areas.

Toward Reform. On Nov. 3, 1936, a conference of the colonial governors general opened in Paris which was to

	Table 1		Area	Popula-	
Territories	Political Status	Capital	sq.mi. (approx.)	tion*	
Africa:					
Tunisia†	Protectorate	Tunis	48,329	2,608,313	
Algeria†	Departement	Algiers	851,078	7,234,684	
Morocco†	Protectorate	Rabat	146,695	6,296,100	
French West Africa	Colony	Dakar	1.814.808	14,702,600	
Togoland	Mandate	Lomé	21,809	739,000	
French Equatorial Africa	Colony	Brazzaville	961,200	3,427,498	
Camerouns	Mandate	Yaoundé	162,892	2,389,489	
Madagascar and dependencies	Colony	Antananariyo	228.589	3,797,796	
Réunion	Colony	St. Denis	970	208,850	
French Somaliland	Colony	Jibuti	8,492	46.396	
Asia:					
Syria and Lebanon†	Mandate (until 1941)	Beirut	80,000	3,600,000	
French India	Colony	Pondicherry	198	299,000	
French Indo-China:	Colony	Hanoi			
Cochin-China	Colony	Saigon	24,981	4.616.000	
Cambodia	Protectorate	Pnom-Penh	69.884	3,046,000	
Laos	Colony	Vientiane	89,343	1,012,000	
Annam	Protectorate	Hué	56,989	5,656,000	
Tongking	Protectorate	Hanoi	44,672	8,700,000	
Kwanachowwan (China)	Territory on lease	Fort Bayard	325	206,270	
Oceania:	,				
New Caledonia	Colony	Nouméa	7,200	53,245	
New Hebrides	Franco-British		.,	,-	
THE WITHOUT THE STATE OF THE ST	Condominium	Vila	5,700	50,000	
Territories in Pacific	Colony	Papeete	1,544	44,000	
America:	,		.,	,	
St. Pierre and Miquelon	Colony	St. Pierre	93	4.175	
Guadeloupe	Colony	Basse-Terre	687	304,239	
Martinique	Colony	Fort-de-France	427	246,712	
Guiana and Inini	Colony	Cayenne	35.126	37.000	
Column and mini	,	,	4.662.031	69.325.367	

*All returns for the year 1936.
†Algeria comes under the ministry of the interior; the colonies come under the colonial ministry (in 1946 ministry of overseas France); the protectorates and mandated territories are the responsibility of the ministry of foreign affairs.

solve the problems raised by the administration of the overseas territories. The government pursued two aims: social justice and an improvement in the standard of living of the masses by appropriate reforms in the economic structure. Fiscal burdens in the colonies were lightened, leaving the native a bigger proportion of his earnings. Colonial budgetary charges were reduced, local production was developed, the market prices of colonial products were raised. An attempt was made to obtain from parliament the creation of a colonial equipment fund to meet the necessary works of re-equipment. Such in their rough outlines were the problems examined at the conference of the governors general. The effects of the decisions taken soon made themselves felt in the overseas territories. New projects were placed on the agenda: public health, protection and regulation of labour, education, maternity and child welfare, progressive access to new rights. In all these spheres the guiding ideas were progress and reform.

The figures in Table II measure the magnitude of the effort made to develop French colonial economy immediately before the outbreak of World War II.

In 1987 France depended on the sea for exactly onehalf of its foreign trade. The part of the empire in this maritime commerce is summarized in Table II:

Table II							
	lm	ports		Exp	orts		
	Empire short tons	Total short tons	%	Empire short tons	Total short tons	%	
1937 1938	8,073,487 8,279,167	40,130,716 36,916,953	19.62 22.42	2,613,320 2,633,244	7,718,587 8,125,025	33.85 32.40	

In gross tonnage, and for the year 1937, the empire supplied 20% of French imports and took 34% of French exports. For a better analysis of this situation Table III provides a breakdown (for 1937).

These statistics refer only to the trade between France and its colonies. They do not give a complete picture of the production and foreign trade of the empire, for the latter was far from constituting a closed economic system. Table IV shows for 1937 the shares (values) of the other

colonies, foreign countries and the metropolitan area respectively in colonial trade.

Of all the foreign countries which normally traded with the French empire, the largest share fell to Great Britain. In 1937 Britain exported to most of the French colonies coal and various industrial products, notably cotton fabrics. In return Britain received from North Africa phosphates, iron ore, alfa-grass; from Indo-China rice and hides; from French West Africa oleaginous products and timber; from Madagascar phosphates and hides. Furthermore, Indo-China maintained a considerable trade with the emporia of Hong Kong and Singapore.

Overseas France in the War.—The remarkable effort accomplished by overseas France continued during the first months of the war, under the driving force of Georges

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						Ia	ible III			
								Imports into France		from :e
							short tons	% of total	short tons	% of total
Algeria		٠	•	•			2,617,495 1,131,253 540,513	32.42 14.01 6.69	1,370,501 320,942 223,975	52.43 12.25 8.59
Syria and Lebanon	:	:	:	:	:	:	63,284 1,803,275	0.77 22 .33	28,490 161,746	1.09 6.19
French West Africa French Equatorial Africa Madagascar				٠			970,789 193,559 175,849	12.13 2.38 2.18	228,067 31,194 76,129	8.75 1.19 2.91
Guadeloupe	•	:	:	:	:	:	144,399 118,732	1.78 1.46	36,911 53,416	1.41 2.05
Réunion		•	•			•	113,569 109,883 34,480	1.41 1.36 0.42	30,838 7,698 4,905	1.18 0.29 0.19
New Caledonia Oceania (rest)							12,799 34,898 6,185	0.15 0.43 0.06	9,469 2,829 722	0.37 0.11 0.03
French Somaliland Guiana	:	:	:	:	:	:	1,242 1,208	0.01 0.01	13,856 10,019	0.53 0.38
St. Pierre and Miquelon	•	•	•	•	•	•	75 8,073,487	100.00	1,613 2,613,320	0.06
						Ta	ble IV			

		• • •				
Imports		Exports				
rom metropolitan France .	53 % 32 %	To metropolitan France To foreign countries	66 % 17 %			
rom other French colonies	15%	To other French colonies	17%			
	100%		100%			

Mandel, who became minister of the colonies in 1938 and was later assassinated by the Germans. This great leader gave a new impetus to all branches of agriculture and industry in the colonies. Its practical result was the dispatch during World War II of many hundred thousand tons of colonial products to metropolitan France and to friendly countries, in particular Great Britain. Military recruiting was also actively pursued. Many new contingents were trained and used to build roads and complete the defensive or economic equipment of the territories. During the campaign in France the colonial armyl-one army corps and eight divisions-had taken part in some heavy fighting and lost three-quarters of its effectives. Then came the armistice of June 1940. France seemed then to have lost everything. Yet, one by one, the colonies answered Gen. Charles de Gaulle's call from London. French Equatorial Africa, the French Indies, the Pacific territories, the Camerouns, St. Pierre and Miquelon had rallied by 1940. Syria followed them in 1941. In 1942 it was the turn of Madagascar, French West Africa, Réunion and French Somaliland. The Antilles and Guiana followed in 1943. As soon as they had rallied, each colony raised troops which took part in the struggle in which France's overseas bases and territories played a decisive part by the mere fact of their strategic position.

Overseas France threw into the struggle tens of thousands of soldiers who fought on all fronts. As early as Dec. 9, 1940, when Gen. Sir Archibald (later Field Marshal Lord) Wavell launched the first offensive in Libya, a French contingent took part in the assault on Sidi Barrani. In Feb. 1941 French troops, under the command of

 $^{1}\mathrm{No}$ account taken of troops from North Africa, attached to the metropolatan forces.

Gen. Jacques Leclerc, captured the oasis of Kufra in Libya and raided Murzuk. In February and March 1941 French troops fought in the campaign of Eritrea, taking part in the battles of Kub-Kub, Keren, Massawa. In June and July 1941 they campaigned in Syria. From January to June 1942 they won renown in the course of the second Libyan campaign, at Halfaya, at Mechili and, above all, at Bir Hacheim, where a French brigade held out for 11 days against the Ariete armoured division until ordered to retire, thus covering the left flank of the British 8th army. In February and March 1942 they made new incursions into the Fezzan.

From October to December of the same year they took part in the third Libyan campaign and inflicted severe losses on the axis at El Alamein, Himemat and Bengasi. In December, under Gen. Leclerc's command, they conquered the Fezzan reaching Tripoli in Feb. 1943. There followed the campaigns of Tripolitania and of Tunisia in which the 1st Free French division took 28,000 prisoners, and the Italian campaign where the French expeditionary corps broke through the Gustav line, opened the road to Rome, but lost 42,000 men. On the material side of the war effort, overseas France supplied many hundred thousand tons of raw materials and products of vital importance for the prosecution of the war. The empire supplied the Allies with (in short tons except where otherwise stated): rubber 23,432; cotton 70,755; oleaginous products 578,942; cocoa 124,925; coffee 113,588; gold 421; nickel 121,465; chrome 322,276; graphite 181,350; phosphates 826,725; diamonds 256,158 carats; and thousands of tons of various products, such as kapok, frozen meat, sisal, wax. honey, timber, gum, rice, vanilla, leather, etc.

French Union.-The war effort of the French empire

French celebration to welcome the British 1st army as it entered Tunis May 7, 1943



created rights to new political liberties. It thus compelled a revision of its institutions and the search for a new formula acceptable to all, which might facilitate as far as possible the development of the peoples overseas.

Thus was born the idea of a French union, an idea which took the place of that of the empire. The French union was an extremely flexible formula of association among countries whose ethnic composition, state of civilization and economic development differed. It excluded the concept of subjection or of a rigid system. It respected the existing degree of development of the different peoples, giving each without delay the maximum of liberty compatible with its development.

The French union comprised: (1) France; (2) Algeria, a natural extension of France², Guadaloupe, Martinique, Réunion and Guiana, old colonies raised to the status of French metropolitan départements by the statute of March 19, 1946; (3) the overseas territories of West Africa, Equatorial Africa, Madagascar, French Somaliland, French Oceania, New Caledonia, St. Pierre and Miquelon, French Indies, which henceforward had their representatives in the French parliament; (4) associated states having a separate existence under international law, in particular Morocco and Tunisia, and probably, as mentioned below, the various countries composing French Indo-China; these states would possess a wide administrative, financial and economic autonomy; they would be able to be represented in the French parliament if they so desired; the respective powers of France and of the associated states would

²Algeria, like France, is divided into départements. It has a governor general, assisted by a council of government (decree of Aug. 23, 1898). It is provided with a special budget (act of Dec. 20, 1900) and is represented in Parliament by 12 deputies.

‡Includes Tunisia.

be settled by a mutual agreement, ratified by the countries concerned; (5) the territories under mandate (Togoland, the Camerouns) already represented in the French parliament which would become protectorates administered by France, within the progressive framework laid down by the San Francisco charter in June 1945.

Government under mandate no longer applied to Syria and the Lebanon. Their independence was proclaimed on June 8, 1941. These countries became members of the United Nations in 1945.

The solutions, so contradictory in appearance, for the departments of the Antilles and for the democratic state of Viet-Nam, accorded recognition on March 6, 1946, marked the extreme limits of a policy which, far from sacrificing to some rigidly closed system, endeavoured to respect and encourage different types of civilization, legitimate local claims and favourable social conditions.

The final form this union was to take had not yet been fully determined in 1946. The reason for that lay in the complex nature of the problem. The French union was the most important question placed before the first and the second National Constituent assemblies. After a new and exhaustive discussion before its constitutional commission, the second assembly voted unanimously, on Sept. 20 and 21, the whole chapter viii defining the structure of the French union. As the second draft of the constitution was adopted by the national referendum on Oct. 13, 1946, it became an organic law of the republic.

The essential organs of the French union were the following: (1) the president of the republic is the president

of the French union and he represents the "permanent interests" of both; (2) the supreme council, presided over by the president of the union, and composed of a delegation of the French government and of the representatives of the associated states, "assists" the French government in the general leadership of the union; (3) the assembly of the union, composed half of the members representing metropolitan France and half of the members representing the overseas départements and territories and the associated states; an organic law would determine exactly how the members of the assembly would be appointed by different territories of the union; the assembly of the union would be consulted by the French parliament or government or by the governments of the associated states, on all legislative matters of interest to the overseas territories.

Since 1941 France's colonial policy had under-

Table V.	French Colonial Empi- 193:	•	tistical Data 194	14
	Value (000's omitted)	Amount or Number	Value (000's omitted)	Amount or Number
		1 franc = 2.8 cents 179 francs =£1		1 franc = 1.9 cents 200 francs =£1

Item Exchange rate
United States Great Britain ALGERIA \$62,566 (£12,797) \$62,564 (£12,797) 2,735 mi. 30,776 mi. 34,351* Minerals 3,422,682 tons 7,716 " 4,850 " Iron ore 1,048,287 tons 647,160 " 174,274 " 160,274 " 152,228 Livestock 5,965,133 2,736,544 \$162,290 (£33,195) \$82,290 (£16,832) \$9,404 (£1,924) \$9,117 (£1,865) \$5,520 (£1,182) \$5,527 (£1,130) \$143,766 (£29,406) \$11,026 (£2,255) \$7,272 (£1,487) \$7,262 (£1,485) \$5,671 (£1,160) \$5,556 (£1,075) Cattle
Exports—total
Wines
Fruits (fresh and dried)
Iron ore 789,316 441,356 gal. 142,000 tons 3,036,000 " 76,000 " 27,000 14,000 tons 94,000 " 22,000 " 49,000 " 12,000 " Metal manufactures . . . Vehicles ehicles Defense Standing army personnel Standing air force personnel . . . Education Infant schools . . Students 14,306 484 Students . . Universities . . 2,248

1044

		738	194	4 Amount or
	Value (000's omitted)	Amount or Number	Value (000's omitted)	Number
MOROCCO Finance				
Government revenues	\$30,758 (£6,291) \$30,756 (£6,291) \$115,137 (£23,550	,	\$79,333\$ (£19,686) \$79,314\$ (£19,681) \$492,511\$ (£122,211)	
Transportation Railroads		1,129 mi. 4,636 mi.		1,224 mi.
Highways		15,496		22,043
Telephones		3,499 mi. 38,714		
Minerals •		1,595,628 tons		1,592,715 tons
Phosphate rock		794 " 95,456 "		29,980 tons
Iron ore		293,322 " 135,803 "		5,637 " 148,039 "
Crops Barley		1,196,767 tons		. 40,007
Wheat		695,221 " 61,067 "		
Oats		52,359 " 48,501 "		
Livestock Sheep		10,162,126	6	12,870,472
Goats		5,800,507 1,912,364		8,088,310 2,748,760
Mules and asses	\$43,237 (£8,844)	774,900	\$53,811 (£13,336)	1,022,419 1,691,457 tons
Phosphates	\$43,237 (£8,844) \$8,251 (£1,688) \$5,626 (£1,151) \$2,601 (£532)	1,579,460 tons 124,990 "	\$53,811 (£13,336) \$13,179 (£3,266) \$1,172 (£290) \$3,473 (£866) \$13 (£3) \$72,863 (£18,058) \$984 (£244) \$8,434 (£2,090) \$8,238 (£2,042)	1,511,653 " 12,142 "
Fish (preserved)	\$2,601 (£532) \$2,259 (£462)	15,237 " 9,149 "	\$3,493 (£866) \$13 (£3)	4,761 " 19 "
Imports—total	\$61,212 (£12,520 \$8,066 (£1,650)	90,474 tons	\$72,863 (£18,058) \$984 (£244)	616,526 tons 6,889 "
Petroleum	\$2,059 (£462) \$61,212 (£12,520) \$8,066 (£1,650) \$5,196 (£1,063) \$4,938 (£1,010)	12,227 tons	\$8,434 (£2,090) \$8,238 (£2,042)	4,940 tons
Defense Standing army personnel Standing air force personnel		58,862† 1,879†		
Education European primary schools		213*		
Students		37,355* 16*		
Students		11,335*		
Students		2,060* 144*		
Students		25,706* 48*		
Students		17,169*		
Finance Government revenues	\$20,266 (£4,145)		\$14 005¶ (£2 454)	
Government expenditures	\$20,263 (£4,145)		\$16,895¶ (£3,456) \$16,890¶ (£3,455)	
Railroads (government)		1,123 mi.		
Telephones		28,000*		14,774 26,955
Minerals Phosphate rock		2,126,116 tons		575,693 tons
fron ore		905,704 " 31,739 "		97,954 " 10,898 "
Lead		26,219 "		5,721 "
Wheat		419,315 tons 217,814 " ♀		194,644 tons§ 71 087 " §
Olives		110,230 " 36,376 " å		71 087 " § 128,749 " § 7,716 " §
Livestock		33,069 "		17,416 " §
Sheep		2,315,700 1,218,900		3,667,000 2,278,000
Cattle		501,900 148,200		553,000 171,000
Forest products Cork		7,852 tons		2,800 tons
Firewood		1,248,907 cu.ft. 320,658 cu.ft.		4,149,132 cu.ft. 1,682,325 cu.ft.
Total		10,661 tons 4,469 "		9,648 tons
Fish (trawled)		3,184 " 126 "		3,600 " 694 ",
Manufactures Chemical	\$872 (£179)	120	£1 0055 / 001 o)	33 "
Wood and paper	\$872 (£178) \$501 (£102) \$41 (£8)	•••	\$1,285\$ (£319) \$1,572\$ (£390)	•••
Glass		•••	\$254§ (£63) \$532§ (£132)	•••
Olive ail	\$38,943 (£7,965) \$9,578 (£1,959) \$5,054 (£1,034) \$4,741 (£970)	45,000 tons		
Wheat	\$4,741 (£970) \$3,818 (£781)	29,520,000 gal. 91,000 tons		
Cotton cloth	\$3,818 (£781) \$44,886 (£9,181) \$3,499 (£716)	1,754,000 " 5,000 tons		
Machinery and apparatus	\$2,936 (£601) \$2,522 (£516)	9,000 "		
Petroleum	\$2,470 (£505)	•••		
Standing army personnel	\$126 (£26)	25,000		
Schools (all types)	+.20 (220)	490†		
Students	42 6 1040 -	96,522†		
*1939. †1937. §1945. 19	43. ¶1940 _i ç	Wine. ōOlive Oil.		

gone a far-reaching transformation in spirit and methods. The new policy was first applied in Equatorial Africa. It found formal expression at the conference of Brazzaville (Jan. 30 to Feb. 6, 1944), where the methods which were to transform colonization were outlined. Later it brought about numerous reforms which all tended toward self-administration of the colonial territories by native "élites."

Various decrees concerning more particularly Madagascar, the Camerouns and Somaliland granted deliberative powers to the representative councils. In these councils the number of native delegates was made equal to that of French delegates.

A new and important step toward liberalism was taken on April 5, 1946, when the first national constituent assembly voted the electoral law applicable to the overseas territories. Henceforth these were entitled to one deputy for every 800,000 inhabitants and there would be only one single electoral college, embracing both citizens and noncitizens. This decision, which was far from being final, associated in a still more intimate manner the populations overseas with the decisions of the French parliament.

In French law there no longer existed "French subjects" and "natives," but solely "French citizens." In application of this essential principle the special tribunals for natives and the special penal code for natives were abrogated by decrees issued on the initiative of the minister of overseas France. Requisitioning of labour was forbidden, and the native became a free workman, freely discussing the conditions on which he undertook to work. A system of contract replaced one of constraint. Though the French union appeared rich in possibilities, it was also passing

through a grave crisis. Problems were intricate, obstacles far from being all overcome, and misunderstandings and strains were inevitable. The Indo-Chinese question, in particular, after a series of dramatic events, still caused many anxieties.

The Indo-Chinese Problem.-After the armistice of June 25, 1940, French Indo-China found itself at the mercy of Japan. The latter, after a series of ultimata, supported by its fleet and its army succeeded in occupying Indo-China in the course of the year 1941. Furthermore, Japan encouraged Siam to break the treaty of nonaggression signed with France in 1938 and to attack Indo-China. Under Japanese pressure a portion of Cambodia, the rice-producing provinces of Sisophon, Battambang and Siem-reap, were handed over to Siam, as were also those parts of Laos situated to the west of the river Mekong.

The subjection of French Indo-China by Japan was completed by March 9, 1945. That day the Japanese attacked the French troops at Hanoi, Lang-son and at other points. These troops had established contact with the French provisional government of Gen. de Gaulle, also with U.S. troops in the Philippines. They had revictualled the U.S. submarines, co-operated with the allied air forces based in the Philippines, China and India, and had in fact car-

ried on active military preparations against the Japanese. After several weeks' resistance about 3,000 Frenchmen succeeded in crossing into China; 2,200 Frenchmen were killed, of whom 400 were civilians and 1,800 soldiers; 756 French civilians were imprisoned by the Japanese police. Thousands of soldiers were taken prisoner. At the same time the French administration was eliminated and a puppet Annamese government set up at Hanoi by the Japanese.

†1945.

†1943.

§1937.

1941.

¶1944.

On Aug. 14, 1945, Japan surrendered unconditionally. Indo-China, divided into two zones by the 16th parallel, was provisionally occupied by Chinese troops on the one hand and by British on the other, whose mission was to disarm the Japanese forces. The loyal support the French received from the British saved numerous French lives. At Hanoi, under the pressure of the Annamese League.

	Table VI.—French Colonial			942
	Value (000's omitted)	Amount or Number	Value (000's omitted)	Amount or Number
FRENCH INDIA			,	
Exchange rate	•	1 Indian rupee = 36.6 cents (1s.6d.)		1 Indian rupee =
Finance		30.0 cents (15.0d.)		30.1 cents (1s.6d.)
Government revenues	\$1,243,066* (£254,258)		\$1,255*† (£311) \$1,255*† (£311)	
Transportation	. \$1,243,066* (£254,258)		\$1,255*† (£311)	
Railroads		22 mi.		• • •
Roads	•	228 "		186 mi.‡
Telephones		35§		54‡
Telephones	•	122 mi.§		150 mi.‡
Radio sets	•	156§		538‡
Poultry		77.561		65 625†
Carrie	•	<i>77,</i> 561 50,293		65,625‡ 44,525‡ 21,579‡ 13,811‡
Sheep	ı.	20,842		21,579
Goats		17,119 287		224‡
Horses	\$6,492 (£1,328)	• • •		
Groundnuts	\$6,492 (£1,328) \$4,371 (£894) \$1,523 (£312) \$16 (£3) \$2,508 (£513) \$683 (£140) \$215 (£44)	81 tons		
Onions	\$16 (£3)	3,000 " 501 "		
imports—total	\$2,508 (£513)			
Oils	\$683 (£140)	11,000 tons 462 "		
Betel nuts	\$215 (£44) \$179 (£37) \$131 (£27)	3,000 "		
Metals and ores	\$131 (£27)	538 "		
Education Schools				<i>7</i> 1
Students				13,300
FRENCH INDO-CHINA				
Exchange rate				
United States		1 franc = 2.8 cents		1 franc = 2.2 cents
Great Britain		179 francs = £1		177 francs =£1
Government revenues	\$25,842 (£5,286) \$24,041 (£4,917) \$54,694 (£11,187)		\$46,044 (£11,411)	
Government expenditures	\$24,041 (£4,917)		\$46,044 (£11,411) \$46,044 (£11,411) \$57,362 (£14,216)	
National debt	\$34,094 (£11,18/)		\$57,362 (£14,216)	
Railroads		2,093 mi.		1,719 mi.
Highways		17,040 "		20,254 "
Telephones		9,087		
Telephones		9,693 mi.		9,631 mi.
Radio sets		3,500	•	•••
Tin		1,791 tons		401 tons¶
rungsten		601 "		401 tons¶ 55 " ¶ 1,549 " ¶ 15,529 " ¶
Zinc (smelter production)		4,927 " 79,069 "		1,549 " 9
Gold		8,745 oz.		12,860 oz.¶
Livestock		0.005.000		
Swine		2,995,000\$ 2,263,890§		
Cattle		1,687,250§		
Crops		7 700 000		7007000
Rice		7,700,000 tons 715,000 "		7,997,000 tons 300,000 "
Sugar		715,000 " 82,000 "		88.000 "
Cobra		33,000 "		42,900 " 36,300 "
Groundnuts	\$81,875 (£16.747)	4.401.000 "	\$56,362 (£13,968)	1.870.000 "
Rice and rice products	\$81,875 (£16,747) \$29,353 (£6,004) \$17,815 (£3,644)	1,170,000 "	\$27,869 (£6,907) \$18,556 (£4,599) \$2,292 (£568) \$1,133 (£281)	1.074.000 "
Rubber	\$17,815 (£3,644) \$14,562 (£2,979)	64,000 "	\$18,556 (£4,599)	42,000 "
Coal.	\$3,540 (£724)	1,742,000 "	\$2,292 (£308) \$1,133 (£281)	372.000 "
Coal	\$3,540 (£724) \$55,170 (£11,285) \$6,537 (£1,337)	544,000 " 21,797 "	\$33,345 (£8,264)	116,403 "
Metal manufactures	\$6,537 (£1,337) \$6,455 (£1,320)	21,797 "	\$33,345 (£8,264) \$2,021 (£501) \$7,727 (£1,915)	3,000 "
Petroleum products	\$3,139 (£642)	8,000 " 110,000 "	\$7,727 (£1,915) \$409 (£101)	<i>5,</i> 000 " 18,000 "
ducation	•		+ / / / / / / /	,
French elementary and high schools Students		42 ♀ 8,856♀		
Native elementary and high schools		8,836♀ 7,164♀		
Students		56 <i>5,</i> 190♀		
Professional schools		5₽		
*0	51007 #1041	5 1044 21000		

for Independence with communist tendencies (the Viet-Minh), the puppet government established by the Japanese had fallen and been replaced by an insurrectionary government under the leadership of Dr. Ho Chi-Minh. This government had proclaimed the republic of Viet-Nam comprising Tongking and Annam in which they wished to include Cochin-China. But a French expeditionary corps under the command of Gen. Leclerc landed at Saigon and, in a campaign lasting several months, reoccupied Cochin-China. He then made preparations for a landing at Haiphong to occupy Tongking as well.

91**939.**

Meanwhile the French and the Chinese governments were conducting negotiations which resulted on Feb. 28, 1946, in two Franco-Chinese agreements. These provided, in particular, for the evacuation by Chinese troops of

		Colonial Empire, Ce	16	1945		
	Value (000's omitted)	38 Amount or Number	Value (000's omitted)	Amount or Number	Value (000's omitted)	Amount or Number
RENCH EQUATORIAL AFRICA		1 fr 0 0 acuda		1 franc = 2.2 cents		1 franc = 1.9 cents
United States		1 franc = 2.8 cents 179 francs = £1		177 francs =£1		200 francs =£1
inance Government revenues	\$6,870 (£1,390) \$7,051 (£1,369)		\$6,781 (£1,661) \$6,854 (£1,679)		\$8,904 (£2,259) \$10,566 (£1,661)	
Railroads		998 mi. 1,000 " 2,392 "		5,000 mi.* 4,750 "		
Ainerais Diamonds Gold Zinc		15,914 carats 40,028 oz. 4,400 tons		33,500 carats 96,066 oz. 2,750 tons 9,039 "		60,000 carats† 84,106 oz.† 1,653 tons† 6,614 " †
Lead irops Palm kernels and oils‡		2,970 " 25,221 tons 10,860 " 2,461 "		12,760 tons 19,470 " 5,060 "		12,890 tons† 19,250 " † 3,410 " †
Coffee:: ivestock Cattle		955,420 § 912,517 § 912,517 §		•		4,000,000† 3,000,000† 2,000,000†
Goats Exports—total	\$7,395 (£1,513) \$2,825 (£578) \$1,369 (£280) \$1,005 (£206) \$440 (£90)	367,290 tons 303,380 " 11,000 tons 37,681 oz. 17,000 tons	\$6,798 (£1,686) \$337 (£84) \$3,155 (£782) \$2,125 (£527) \$163 (£40)	80,080 tons 26,840 " 19,470 tons 69,347 oz. 8,690 tons	\$13,492 (£3,348) \$1,528 (£379) \$4,573 (£1,135) \$3,851 † (£956) \$99 (£25)	132,725 tons 61,704 " 21,628 tons 124,134 oz.† 1,519 tons
mports—total . Metal products	\$8,512 (£1,741) \$1,274 (£261) \$1,224 (£250) \$820 (£168) \$410 (£84)	83,930 " 5,060 " 1,771 " 14,190 " 894 "	\$10,140 (£2,515) \$821 (£204) \$1,639 (£406) \$988 (£245) \$1,087 (£270)	81,840 " 2,420 " 1,650 " 17,930 " 1,540 "	\$17,730 (£4,400) \$2,381† (£591) \$5,415 (£1,344) \$997 (£247) \$715 (£177)	94,908 tons 5,720 " 2,205 " 13,543 " 1,058 "
Defense Standing army personnel	• • • • • • •	4,347§	, ,	•••		14,234†
Native schools		71 § 132 § 375 § 20,000 §				
FRENCH SOMALILAND Finance	\$450H# [P1 47)					
Government revenues	\$653 ¶ (£147) \$653 ¶ (£147)	60 −1				
Railroads	\$24559 (£502)	60 mi. 330 " 170,857 tons? 3,910 " 5			\$4,2269 (£1,047)	95,383 tons?
Coffee	\$291° (£60)	20,611 " 5 56,334 " ⁶			\$328° (£81)	6,563 " 6 10,093 " 6 47,021 " ^a
Imports—total	\$4,3179 (£883) \$70° (£14) \$106° (£22)	75,000 tons9 1,624 " ° 2,965 " °			\$6,5759 (£1,629) \$452° (£112) \$129° (£32)	70,106 tons? 4,991 " ° 1,920 " °
Cement	\$73° (£15) \$314° (£64) 1939. ¶Es	1,000 " *	s transit trade. – ő	Transit trade only.	\$65° (£16) \$162° (£40) Domestic export.	2,306 " ° 83 " °
		Colonial Empire, W	estern Africa: Statisi	tical Data		
	Value	Amount or	Value Value	Amount or	Value	945 Amount or
Exchange rate United States	(000's omitted)	Number 1 franc = 2.8 cents 179 francs =£1	(000's omitted)	Number 1 franc = 2.2 cents 177 francs =£1	(000's omitted)	Number 1 franc = 1.9 cents 200 francs = £1
CAMEROUN Finance						
Government revenues	\$4,013 (£821) \$3,406 (£697)				\$6,819* (£1,690) \$5,690* (£1,410)	
Railroads		314 mL 3,105 mL		314 mi.†		
Telephones		q				658 1,405 mi.
Gold		15,542 oz. 271 tons		22,505 oz.‡ 366 tons‡		16,297 oz. 186 tons
Sweet potatoes and yams		440,920 tons 319,667 " § 275,575 " § 110,230 " §				
Livestock Sheep and goats I		1,000,000				430,000* 893,600*
Swine	\$7,231 (£1,479) \$2,419 (£495)	150,000∥ 180,973 tons 34,069 "	\$3,948 (£979) \$1,241 (£208)	72,022 tons	\$14,426 (£3,580)	112,420 tons
Palm kernels	\$1,163 (£238) \$662 (£135)	36,522 " 4.686 "	\$1,241 (£308) \$542 (£134) \$11 (£3) \$270 (£67)	22,455 " 24,231 " 117 "	\$4,385 (£1,088) \$855 (£212) \$1,741 (£432)	42,373 " 19,747 " 7,385 "
Palm oil	\$505 (£103) \$483 (£99) \$6.177 (£1.263)	9,837 " 44,966 " 64,790 tons	\$218 (£54)	7,977 " 9,633 " 40,010 tons	\$388 (£04)	4,397 " 20,950 "
Cotton cloth	\$6,177 (£1,263) \$626 (£128) \$440 (£90) \$324 (£66)	789 " 8,569 " 643 "	\$4,376 (£1,085) \$943 (£234) \$332 (£82) \$593 (£147)	1,420 # 8,639 #	\$924 (£229) \$8,804 (£2,185) \$2,659 (£660) \$332 (£82) \$146 (£36)	1,157 " 9,310 "
Machinery	\$323 (£66)	574 "	\$393 (£147) \$310 (£77)	895 " 1,046 "	\$146 (£36) \$232 (£58)	161 " 185 "
Schools (all types)		160 16,244				

Table VIII.—French Colonial Empire, Western Africa: Statistical Data (continued)

iqi		1938 1941				1945	
	Value	Amount or	Value	Amount or	Value	Amount or	
FRENCH WEST AFRICAT	(000's omitted)	Number	(000's omitted)	Number	(000's omitted)	Number	
Finance Government revenues	\$32,415 (£6,630) \$32,415 (£6,630)		•••		\$51,672 (£12,822)	1	
Government revenues	\$32,415 (£6,630)		•••		\$51,672 (£12,822 \$51,672 (£12,822		
Railroads		2,389 mi.				2,711 mi.*	
Highways		11,577 mi.				18,641 mi.*	
Gold		127,230 oz.		3,961 oz.9		6,040 oz.*¢	
Diamonds		61,929 carats 9,288 tons		57,735 carat 1,100 tons	S	69,727 carats*	
Crops		•		1,100 1013			
Manioc		2,358,261 tons§6 813,497 " §6 788,916 " § 501,657 " §6				2,204,600 tons* 1,322,760 " *	
Groundnuts		788,916 " \$				881,840 " *	
Sweet potatoes and yams		394,182 " §5				1,653,450 " * 496,035 " *	
Livestock				12 412 0000		-	
Sheep and goats		11,164,000 3,457,000		13,413,000 ^o 4,264,000 ^o		12,843,000* 4,252,000*	
Cattle		3,457,000 448,000		4,264,000° 509,000°		306,000 *	
Horses		178,000 174,000		184,000 ^a 199,000		156,000* 230,000*	
Exports—total	\$39,651 (£8,110)	1.056.580 tons	\$34,496 (£8,556) \$13,405 (£3,325) \$3,500 (£868) \$17 (£4)	656,590 tons 386,760 "	\$32,798*(£8,128)		
Cacao	\$17,248 (£3,528) \$4,830 (£988)	592,020 " 54,970 "	\$3,500 (£868)	47,300 "	\$900* (£223)	139,700 " * 16,141 " *	
Gold	\$3,643 ‡ (£745)	135,580 oz.‡	\$17 (£4) \$1,054 (£261)	643 oz.	\$51 * (£13)	1,608 oz.*	
Coffee	\$2,957 (£605) \$2,176 (£445)	77,880 tons 15,950 "	\$4,561 (£1,131)	51,150 tons 31,900 "	\$2,247* (£337) \$4,919* (£1,219)	55,110 tons* 26,901 " *	
Camels	\$2,176 (£445) \$647 (£132)	15,950 " 6,270 "	\$4,561 (£1,131) \$3,322 (£824)	26.400 "	\$32,798*(£8,128) \$7,361 * (£1,824) \$900 * (£223) \$51 * (£13) \$2,247 * (£557) \$4,919 * (£1,219) \$5,800 * (£1,437) \$39,465 * (£9,871) \$9,817 * (£2,433) \$438 * (£158)	30,626 " *	
Cotton cloth	\$45,562 (£9,319) \$10,492 (£2,146)	613,360 tons 11,512 "	\$29,687 (£7,363) \$3,212 (£797) \$1,327 (£329)	247,170 tons 2,200 "	\$9,817* (£2,433)	291,950 tons* 5,366 " *	
Rice	\$1,506 (£308) \$1,417 (£290)	45,210 " 11,330 "	\$1,327 (£329)	26,180 " 1,760 "	\$638* (£158) \$1,644* (£407)	3,170	
Jute cloth and bags	\$1.291 (£264)	4,290 "	\$416 (£103) \$805 (£200)	1.430 "	\$1,503 * (£372)	2.200 " *	
Wine and liquor	\$991 (£203) \$795 (£163)	12,540 "	\$1,428 (£354) \$882 (£219)	13,970 " 9,570 "	\$1,503* (£372) \$2,339* (£580) \$3,635* (£901)	17,050 " * 33,725 " *	
Education	\$7 93 (£103)	15,385 "	\$002 (£219)	9,370	\$3,035 (E901)	33,7 23	
Schools Grade and secondary		306§					
Technical		13 §					
Moslem		78 738					
Enrolment .		u					
Grade and secondary		56,334§ 778§					
Moslem		350§					
Private		10,848§					
Government revenues	\$1,266 (£259)				\$2,856 (£709) \$2,806 (£696)		
Government expenditures	\$1,266 (£259)				\$2,806 (£696)		
Railroads		242 mi.				2,773 mi.	
Communication Telephones		202				303	
Telegraph lines		519 mi.				• • •	
Crops Castor oit seeds						278,441 tons	
Yams and sweet potatoes						163,460 " 106,865 "	
Manioc						101,103 "	
Livestock Sheep		95,000§				(
		74.000§				{350,000	
Cattle		35,000 § 12,000 §				55,000 220,000	
Exports—total	\$1,915 (£392) \$549 (£112)		\$1,739 (£431) \$196 (£49)	36,120 tons	\$3,299 (£819)	29,872 tons	
Cacao	\$549 (£112) \$309 (£63)	8,000 tons 10,000 "	\$196 (£49) \$360 (£89)	3,268 " 12,790 "	\$314 (£78) \$80 (£20)	3,175 " 7,998 "	
Goats Cattle Swine Exports—total Cacao Polim kernels Corn Copra Groundnuts Imports—total	\$309 (£63) \$306 (£63) \$123 (£25)	23.000 "	\$360 (£89) \$145 (£36) \$83 (£21)	6.677 "	\$3K (£0)	944 "	
Groundnuts		3,000 " 2,183 "	\$57 (#:14)	2,446 " 1,507 "	\$321 (£80) \$261 (£65)	1,124 " 3,592 "	
Imports—total	\$2,123 (£434)		\$716 (£178)	6.757 tons	\$321 (£80) \$261 (£65) \$2,800 (£695) \$1,118 (£277)	10,913 tons	
Cotton cloth	\$2,123 (£434) \$477 (£98) \$175 (£36)	547 tons 257 "	\$716 (£178) \$93 (£23) \$26 (£6)	89 " 43 "		377 "	
Petroleum and derivatives	\$137 (£28)	2,909 "	\$9 (£2)	133 "	\$79 (£20)	1,437 "	
Metal manufactures	\$117 (£24)	740	\$7 (£2)	52 "	\$32 (£8)	208 "	
Official schools		60 4.997					
*1944. †1940. ‡Exports only. §1937	7. 1939. ¶t	4,997 Does not include Togo	. SEuropean ow	ned mines only.	čExcludes Dakar.	□1942.	
1774. [1740. 4EXPOID ONLY. 81707	. (1.707. 1	- Jos noi maiore 10gc	. +Loropeum OW	noa mnes omy.	JANEIVAGS PURUI.	. / 744	

northern Indo-China and their replacement by French troops. At the same time the high commissioner for France in Indo-China, Adm. Thierry d'Argenlieu, was negotiating with the Viet-Minh, with the approval of the French government, and these negotiations resulted in the agreement of March 6, 1946, by which military reconquest was replaced by a settlement between France and the Annamese. This agreement embodied the following principles: (1) the French government recognized the republic of Viet-Nam as a free state, having its government, parliament, army and finances, forming part of the Indo-Chinese federation and of the French union. So far as the reunion of the three "Ky" was concerned, the French government

undertook to ratify the decisions taken by the population when consulted by referendum. (2) The government of Viet-Nam declared itself ready to extend a friendly welcome to the French army when, in accordance with international agreements, it arrived to relieve the Chinese troops. A supplementary agreement, attached to the existing preliminary convention, was to fix the terms under which the relieving operations would be carried out. (3) The stipulations set forth above were to come into force as soon as signatures had been exchanged. Each of the contracting parties was to take all necessary measures to bring hostilities to an end at once, hold the troops in their respective positions and create an atmosphere favourable to the immediate opening of frank and cordial relations. These negotiations would deal especially with the diplo-

³Ky—Annamite expression signifying country. e.g., Bac-Ky—country of the north (Tonking); Trung Ky—country of the middle (Annam); Nam Ky—country of the south (Cochin-China).

Table IX.—French Colonial Empire, Indian Öcean: Statistical Data 1938 1941 1945							1945
		Value	Amount or	Value	Amount or Number	Value (000's omitted)	Amount or Number
Exchange rate		(000's omitted)	Number	(000's omitted)		(000 3 01111100)	
United States			1 franc = 2.8 cents 179 francs =£1		1 franc = 2.2 cents 177 francs =£1		1 franc = 1.9 cents 200 francs =£1
MADAGASCAR Finance						** * *	
		\$1,017 (£208)		\$902 (£224)		\$1,340 (£333) \$1,340	
Government expenditures		\$1,023 (£209)		\$828 (£205)		(£333)	
Transportation Railroads			531 mi.*				
			16,000 mi. 336 mi.				
Minerals Charcoal			•••		1,100 tons		6,160 tons‡
Gold			11,217 oz.† 13,417 tons†		10,996 oz. 14,320 tons		9,182 oz.‡ 14,244 tons‡
Mica	• • • •		649 " †		527 "		377 "
Rice			709,881 tons 413,363 "				
Sugar cane			279,764 " 110,230 "				
Livestock Cattle			4,947,008				
Swine			550,000 190,705				
Goats		\$23,700	150,000 306,074 tons	\$15,415	123,200 tons	\$25,497§	145,615 tons§
Coffee	.	(£4.848)	45,342 "	(£3,823) \$4,083	22,640 "	(£6,319) \$8,572§	49,978 " §
Vanilla		`\$7,524` (£1,539) \$2,143	415 "	(£1,013) \$3,324	440 "	(£2,124) \$4,428§	397 " §
Meat		(£438) \$1.666	12,318 "	(£824) \$1,038	6,600 "	(£1,097) \$2,269§	5,302 " §
Corn		(£341) \$1,238	59,387 "	(£257) \$121	6,710 "	(£562) \$44§	1,708 " §
Hides and skins		(£253) \$1,179	6,223 "	(£30) \$499	2,640 "	(£11) \$1,037§	3,278 " §
Imports—total		(£241) \$17,528	153,720 tons	(£124) \$6,782	49,500 tons	(£257) \$13,198§	67,864 " §
Cotton cloth		(£3,585) \$5,347	7,322 "	(£1,682) \$1,296	2,750 "	(£3,271) \$860§	5,113 " §
Petroleum and petroleum products		(£1,094) \$1,182	18,062 "	(£321) \$207	3,740 "	(£213) \$1,385§	12,146 " §
Wine		(£242) \$800	1,769,702 gal.	(£51) \$389 (£04)	690,698 gal.	(£343) \$105§	48,292 gal.§
Automobiles and parts		(£164) \$706 (£144)	1,378 tons	(£96) \$123 (£31)	220 tons	(£26) \$1,173§ (£291)	1,574 tons§
Defense		(2144)	5245*	(201)		(2271)	20.704
Education			5,365*				30,704
Schools (all types)			997† 124,058†				1,017 112,684
REUNION							
Finance Government revenues		\$2,598				\$3,961	
Government expenditures		(£531) \$2,566				∘ (£983) \$3,891	
Transportation		(£525)				(£966)	
Railroads			80 mi. 921 "				80 mi. 1,169 "
Communications Telephones			1,195				1,686
Telegraph lines			930 mi. 412*				1,210 mi. 950
Crops Sugar cane			94,441 tons		100,610 tons		26,557 tons
Corn oil			***		17,746 " 528 "		9,885 " 495 "
Livestock Swine					51,539		102,020†
Cattle					35,465 20,940		49,313† 30,773†
Exports—total		\$5,933 (£1,214)	94,931 tons	\$2,185 (£542)	40,700 tons	\$9,261	91,046 tons
Sugar		(£1,214) \$4,487 (£918)	86,274 "	\$1,580 (£392)	41,000 "	(£2,298) \$6,758 (£1,677)	88,782 "
Rum		\$529 (£108)	928,323 gal.	\$109 (£27)	340,000 gal.	\$334 (£83)	145,509 gal.
Geranium essence		\$501 (£102)	127 tons	\$193 (£48)	57 tons	\$1,143 (£284)	72 tons
Vanilla		\$263 (£54)	59 "	\$124 (£31)	20 "	\$345 (£86)	32 "
Imports—total		\$7,581 (£1,551)	101,948 tons	\$2,955 (£733)	40,785 tons	\$5,558 (£1,379)	33,280 tons
Rice		\$1,327 (£271)	33,692 "	\$889 (£220)	18,841 "	\$1,097 (£272)	9,177 "
Machinery		\$546 (£112)	1,601 "	\$117 (£29)	430 "	\$268 (£67)	629 "
Cotton cloth		\$41 <i>5</i> (£85)	487 "	\$95 (£24)	72 "	\$727 (£180)	317 "
Petroleum products	• • •	\$320 (£65)	5,113 "	\$20 (£5)	118 "	\$174 (£43)	1,544 "
Schools			214 28,000			•	

		Table X.—French Colonial Empire, Pacific Ocean: Statistic 1938			1944	1944	
	Value	Amount or	Value	Amount or	Value	Amount or	
Exchange rate	(000's omitted)	Number	(000's omitted)	Number	(000's omitted)	Number	
United States		1 franc = 2.8 cents		1 franc = 2.2 cents		1 franc =1.9 cents	
Great Britain		179 francs=£1		177 francs $=$ £1		200 francs $=£1$	
Finance Government revenues	\$1,323 (£271)		\$1,705 (£423)		\$2,413 (£598)		
Government expenditures	\$1,144 (£234)		\$1,384 (£343)		\$2,202 (£546)		
Transportation Railroads		20 mi.					
Highways • • • • • • • • • • • • • • • • • • •		570 mi.					
Chrome (metal content)		28,632 tons		33,342 tons		32,223 tons	
Nickel (metal content)		10,539 "		11,710 "		5,962 "	
Coffee		1,874 tons				1,566 tons*	
Copra		3,240 " *				377 " *	
Cattle		101,400 9,800		98,400 8,600		91,100 8,400	
Goats		7,600		8,900		5,400	
Swine		7,600		7,600	•	11,200	
Mother of pearl	\$4,564 (£934)	626 tons* 103,400 tons	\$5.055 (£1.254)	202,377 tons	\$4.31.4 (£1.060)	28,126 tons	
Nickel (in bars)	\$2,632 (£538)	8.835 "	\$5,055 (£1,254) \$2,907 (£721)	9,108 "	\$4,314 (£1,069) \$3,835 (£950)	8.250 "	
Chrome ore	\$624 (£128) \$347 (£71) \$151 (£31)	1.948 "	\$1,749 (£434)	616 "	\$393 (£97)	18,979 "	
Nickel ore	\$151 (£31) \$123 (£25)	35,816 " 3,247 "	\$106 (£26) \$0 (£2)	19,834 " 745 "	¢17 (£/)	377 tons	
Imports—total	\$123 (£25) \$4,567 (£934)	203,810 tons	\$9 (£2) \$3,022 (£750)	117,637 tons	\$17 (£4) \$8,176 (£2,026)	265,590 tons	
Coal	\$1,049 (£215) \$272 (£56)	203,810 tons 151,740 " 725 "	\$744 (£185) \$276 (£68)	152,996 " 807 "	\$8,176 (£2,026) \$1,176 (£291) \$832 (£206)	168,430 " 2,162 "	
Petroleum and products	\$272 (£56) \$182 (£37) \$148 (£30)	4,689 " 3,355 "	\$217 (£54)	3,963 " 3,906 "	\$252 (£62)	3,820 "	
Iron and steel (sheet and bar)	\$148 (£30) \$142 (£29)	2,458 "	\$276 (£68) \$217 (£54) \$164 (£41) \$95 (£24)	1,188 "	\$252 (£62) \$297 (£74) \$264 (£65) \$212 (£53)	2,859 "	
Rice	\$136 (£28)	3,649 "	\$126 (£31)	2,771 "	\$212 (£53)	3,048 "	
Standing army personnel		261				807	
Public and private schools		45‡					
Secondary schools		1‡ 85‡					
Public school students		2,898‡					
Native school students		3,883‡					
Finance Government revenues	\$135 (£28)		\$87 (£23)				
Government expenditures	\$117 (£24)		\$87 (£23) \$90 (£23)				
Transportation Highways		800 mi.¶					
Communication Telephones		63					
Radio sets		150					
Crops Cocoa		2,094*					
Coffee		441					
Cattle		21,200					
Sheep		3,000 800‡					
Exports—total	\$588 (£120) \$366 (£75)	16,075 tons 12,822 "					
Cocoa 🎍	\$366 (£75) \$139 (£28)	2,120 " 695 "					
Coffee	\$63 (£13) \$547 (£112) \$47 (£10)						
Building materials	\$47 (£10) \$41 (£8)	• • •					
Benzine	\$35 (£7)	• • •					
Agricultural machinery, cars, etc	\$34 (£7)	•••					
Finance Government revenues	\$562 (£115)						
Government expenditures	\$562 (£115)						
Sugar cane		2,205 tons 220 "					
Exports—total	\$1,371 (£280)		\$996 (£260) \$145 (£38)	~ "	\$3,7679 (£935)	276,000 tons 9	
Copra	\$728 (£149) \$343 (£70)	23,000 tons 137 "	\$145 (£38) \$406 (£106) \$359 (£94)	7,000 tons	\$9459 (£234) \$4979 (£123)	19,000 " ç 138 " ç	
Phosphate	\$207 (£42) \$22 (£4)	125,000 " 403 "	\$359 (£94) \$7 (£2)	190,000 "	\$1,6849 (£418) \$3499 (£87)	255,429 " 0 832 " 0	
Imports—total	\$1,820 (£372)		4.11 (22)	"	\$4,0889 (£1,014)	34,833 tons ♀	
Flaur	\$158 (£32) \$116 (£24)	3,680 tons 750 "	•••	•••	\$3459 (£86) \$4999 (£124)	1,475 "	
Cotton cloth	\$92 (£19)	103 "		• • •	\$349º (£87)	143 " 9	
*Exports only. †\$575 (£143). ‡1937.	§Condominium with	Gredi britain,	1940. ¶1939.	ମ 945 .			
	Table XI.—Fre	ench Colonial Empire,	America: Statistical	Data			
		1938		1941		1944	
	Value (000's omit		r Value (000's omitte	Amount or d) Number	Value (000's omitted)	Amount or Number	
Exchange rate	•	•	•	•	•		
United States		1 franc = 2.8 179 francs = 3		1 franc = 2.2 co 177 francs = £		1 franc = 1.9 cents 200 francs =£1	
GUADELOUPE Finance							
Government revenues		nai			\$4,525 (£1,121) \$4,427 (£1,097)		
National debt					\$3,016 (£747)	•	
Transportation Railroads		99 m	ni.*				
Highways		540 n				350 mi.	
Telephones		400				462	
Telegraph lines		379 n	н.			824	
		•					

Value Value Value Amount or Number Amount or (000's omtted) (000's omitted) Number (000's omitted) Number 30,864 tons 402,365 " 5,512 " 992 " 55,431 tons† 49,965 " †‡ 380 " † 148 " † Bananas Livestock 17.000 50,000 \$ 25,000 \$ 25,000 \$ 68,000 16,000 6,000 55,569 tons 46,634 " 2,801 " 628,500 gal. 55,363 tons 1,178 tons 9,982 " 7,500 " 2,356 " 11,000 \$ \$3,017 (£748) \$1,781 (£442) \$303 (£75) \$615 (£153) \$4,426 (£1,098) \$164 (£41) \$614 (£152) \$440 (£109) \$307 (£71) \$5,639 (£1,398) \$3,407 (£844) \$110 (£27) \$936 (£232) \$7,595 (£1,882) \$286 (£71) \$804 (£199) \$158 (£39) \$296 (£73) \$8,532 (£1,745) \$3,607 (£738) \$2,479 (£507) \$2,064 (£422) \$7,212 (£1,475) \$644 (£132) \$520 (£106) \$480 (£98) \$413 (£84) 49,965 tons 34,937 tons 8,137 " 1,003,000 gal. 55,425 " 3,050,265 gal. 817 tons 4,000 tons 8,000 " 15,000 " 9,000 " Metals and manufactures
Wheat flour
Fertilizers
Rice
Education
Schools (all types)
Students 132 25.575 FRENCH GUIANA Figure
Government revenues
Government expenditures \$466 (£116) \$466 (£116) Government expenditures
Transportation
Railroads
Highways
Communication
Telephones
Radio sets 30 mi.§ 150 Minerals 40,638 oz. 36,009 oz. 18,602 ox. Crops
Sugar (content) 549 tons¶ 101 tons 9 248 tons [7,500 §
3,000 §
400 §
3,638 tons
40,638 oz. \$8955 (£222) \$499 tons5 (£124) \$1185 (£29) \$536 (£13) \$2,4996 (£620) \$3076 (£76) \$1565 (£39) \$2875 (£71) 2,277 tons 34,273 oz. 1,764 tonsô \$1,008 (£250) \$922 (£229) \$26 (£5) \$11 (£2) \$1,918 (£392) \$216 (£44) \$207 (£42) \$124 (£25) 1,738 tons 1,735 tons 1,56<u>3</u> tonsô 20,723 tons 166 " 2,889 " 419 " \$7 (£2) \$1,164 (£289) \$110 (£27) \$117 (£29) \$51 (£13) 11,053 tons 129 " 2,230 " 97 " 10,362 tonså 303 "å 1,662 "å 720 "å 353 Schools (all types)
Students 2,209 MARTINIQUE \$2,6910 (£667) \$2,6910 (£667) \$5,105 (£1,265) \$5,096 (£1,263) Transportation
Railroads
Highways
Communication
Telephones 160 mi. 665 mi. 160 mi. 665 mi. 1.081 Crops Bananas 38,581 tons 276 " 220 " 3,307 " 75,397 " 2,570 tons 226 " 154 " 2,730 " 955,694 " 660 tons 220 " 220 " 220 " 3,294 "‡ Livestock
Cattle
Sheep and goats
Swine
Exports—total
Sugar
Rum
Bananas
Bananas
Chemical fertilizers
Wheat flour
Catton cloth
Vegetable oils
Education Livestock 45,000 40,000 15,000 40,000 40,000 34,000 7,000 46,908 tons 33,951 " 6,496 " 75,508 tons 9,386 " 12,526 " 293 " 820 " \$8,899 (£1,820) \$4,173 (£854) \$3,075 (£629) \$1,346 (£275) \$6,706 (£1,372) \$676 (£138) \$455 (£93) \$306 (£63) \$276 (£56) \$4,029 (£999) \$2,594 (£643) \$901 (£223) \$55 (£14) \$4,757 (£1,180) \$318 (£79) \$493 (£122) \$324 (£80) \$16 (£4) 41,218 tons 31,607 " 2,885 " 2,125 " 86,722 tons 8,441 tons 12,167 " 432 " 63 " \$5,015 (£1,243) \$2,417 (£599) \$1,789 (£443) \$23 (£6) \$10,623 (£2,633) \$565 (£140) \$1,031 (£256) \$647 (£160) \$299 (£74) 56,653 tons 10,501 " 41,243 " 23,869 tons 9,099 " 376 " 2,104 " Vegetable oils
Education
Schools (all types)
Students
ST. PIERR AND MIQUELON 136 33,785 160 42,349 24 mi. 24 mi. 5 Communication
Telephones
Radio sets
Exports—total
Dried cod
Cod liver oil
Imports—total
Coal
Petroleum products
Tobacco
Wheat flour
Education 80 490 8,377 tonså 1,899 " å 18 " ö 21,605 tonså 7,810 " å 615 " å 529 " å 397 397 400|| 30,313 tons 1,012 " 63 " 44,533 tons 28,120 " 1,641 " 21 " 413 " \$553 (£113) \$60 (£12) \$3 (£1) \$797 (£163) \$161 (£33) \$37 (£3) \$32 (£7) \$29 (£6) 1,146 tons 277 " 13 " 13,170 tons 8,815 " 378 " 14 " 384 " \$1,007\$ (£250) \$804\$ (£200) \$14\$ (£3) \$898\$ (£223) \$59\$ (£15) \$12\$ (£3) \$16\$ (£4) \$36\$ (£9) \$108 (£27) \$22 (£5) \$561 (£139) \$65 (£16) \$12 (£3) \$15 (£4) \$20 (£5) Education
Schools (all types)
Students

1Exports only. 1.048 *Used only by sugar plantations. Exports only. ‡Sugar content. 81937. [1939. ¶1940. 91943. 51945. Budget.

matic relations between Viet-Nam and foreign states, the future statute for Indo-China and economic and cultural interests. Hanoi, Saigon and Paris were to be considered as likely seats for the conference.

By virtue of this agreement, the French army landed troops the same day at Haiphong and in 1946 were occupying Hanoi, Lang-son and other strategic centres. Negotiations begun at Dalat were pursued at Fontainebleau, as provided for under clause (3). The most delicate question was that which referred to the future statute for Cochin-China, which in 1946 was outside the authority of the Viet-Nam government.

The Franco-Viet-Namese conference of Fontainebleau was temporarily interrupted, but a modus vivendi was signed on Sept. 14, 1946, between France and Viet-Nam. It provided for a limited agreement which entered into force on Oct. 30, 1946, and announced in its preamble a resumption of Franco-Viet-Namese preliminary discussions for Jan. 1947. Its ten articles dealt respectively with the following: (1) the liberties granted to Viet-Namese nationals in France and to French citizens in Viet-Nam; (2) the restitution to Frenchmen of their property in Indo-China; (3) the restoration of French teaching in Viet-Nam; (4) the preference given to Frenchmen for posts as counsellors, technicians and experts; (5) the maintenance of the Indo-Chinese piastre as sole currency throughout the whole of Indo-China; (6) the Indo-Chinese customs union; (7) the co-ordination and improvement of communications; (8) the establishment of Viet-Namese consulates in the bordering foreign countries; (9) the cessation of all hostile acts between France and Viet-Nam through agreements reached between the general staffs; the liberation of prisoners and the suppression of "unfriendly propaganda"; (10) the conclusion of special agreements with a view to preparing the way for a final and all-inclusive treaty.

However, political tension mounted steadily after September and by late December, major fighting had broken out between Annamites and French troops at Hanoi and elsewhere. Negotiations scheduled for Jan. 1947 were postponed pending the restoration of "order." (See also Lebanon; Pacific Islands, French; Syria.) (M. Mt.)

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French Possessions in America.—The four colonies of France in the western hemisphere fall into three regional groups: (1) the small islands of St. Pierre and Miquelon, about 10 mi. south of Newfoundland at the mouth of the Gulf of St. Lawrence; each has certain dependent islets. The area of the St. Pierre group is 10 sq.mi. and that of the Miquelon group 83 sq.mi.; the pop. of both was estimated at about 4,175 in 1946. (2) The French West Indies, consisting of the two colonies of Martinique and Guadeloupe, the latter with five small island dependencies: La Désirade, Marie Galante, Les Saintes (including seven small islands), St. Martin (part of this island owned by the Netherlands), and St. Barthélémy. All these islands are in the Lesser Antilles. The only large islands in the group are Martinique (area, 427 sq.mi.; pop., 260,000) and the twin islands of Guadeloupe, in-

cluding Basse-Terre or Guadeloupe proper (area 687 sq. mi.) and Grande-Terre (area, 364 sq.mi.); the pop. of Guadeloupe and dependencies was estimated at 310,000 in 1946. (3) French Guiana, a South American mainland colony in the northeastern part of the continent, including French Guiana proper, a narrow coastal strip with an area of about 3,500 sq.mi., and the large hinterland organized as the dependency of Inini; the area of the whole is 35,126 sq.mi. and the pop. about 37,000 in 1946. There are no large cities in these colonies. The only important town on St. Pierre is the capital of the same name. The largest cities or Martinique (with 1936 census pop.) are Fort-de-France (5°,051), Trinité (39,173), St. Esprit (33,804) and Marin (31,369). The largest cities on Guadeloupe (with 1938 pop. est.) are Pointe-à-Pitre (44,-551), Ste. Anne (1931 est., 15,269), Basse Terre (13,638), Le Moule (1931 est., 17,159), Grand Bourg (on Marie Galante, 12,827) and Capesterre (1931 est., 11,537). The only important city in French Guiana is the coastal capital Cayenne (pop., 11,704). Racial composition of the colonies varies considerably. That of St. Pierre and Miquelon is largely French or of French descent. The population of the French West Indies is almost entirely Negro or mulatto; less than 2% of the total is white; the Saintes islands are inhabited by descendants of Norman and Breton sailors. The population of French Guiana is largely Negro, some of those inhabitants being bush Negroes or Djukas. The language of all of the colonies is French, except that many of the West Indian natives use a dialect known as Creole, and some of the Guianan Negroes speak a bastard English which incorporates many Indian, African, Dutch and Portuguese words. Governmental organization varies considerably. St. Pierre and Miquelon were ruled by a governor appointed from France; they were under control of the Vichy regime in 1941-42. Martinique and Guadeloupe were organized and governed as departments of France, with representatives in the French senate and chamber of deputies and local services organized as in France. In Jan. 1947 the administration of the islands came under the French ministry of the interior and the governors were replaced by prefects. French Guiana was, until 1940, administered by an appointed governor assisted by certain representative agencies; the latter were almost completely suppressed. The territory of Inini was governed directly by the governor of French Guiana.

St. Pierre and Miquelon, which traditionally had depended almost entirely on the fishing industry, experienced, with few exceptions during the decade, a placid development. The nature of the islands' economy was responsible for less disruption caused by the impact of the war in 1939 than was true in many colonies, the chief difference being the inability of the traditionally large numbers of French fishermen to go to the islands for the summer fishing season. Throughout 1941 the Vichy-appointed governor of St. Pierre and Miquelon was harassed by intermittent undercover Free French agitation. A Free French armed vessel, however, seized St. Pierre on the night of Dec. 24, 1941, hoping to establish a Free French territorial nucleus in that area. A local plebiscite showed an overwhelming Free French sentiment, and the move brought widespread popular sympathy in the United States and Canada, but the U.S. government swiftly condemned it as a violation of agreements with the Vichy regime and presented a formal demand for restoration of the status quo ante. A modus vivendi was subsequently arranged under which Vichy control was restored, with, however, a

close supervision of the St. Pierre radio station, established under the Vichy government, the weather reports of which were thought to be of aid to the axis. All importation of arms and munitions into St. Pierre and Miquelon was forbidden in 1942 as a consequence of the attempted coup of late 1941. The administration in 1943 established a council of fisheries to replace a former consultative commission. It also ordered on April 29 an embargo on the export of postage stamps. Regulations of the Vichy government were voided in the northern islands in the latter part of 1944 and the colony reverted to laws of the republic.

The French West Indies, being of greater stretegic importance and larger population and economic interests, reflected the impact of World War II to a greater degree than did the northern islands. The main islands of Martinique and Guadeloupe (and to a smaller extent the Saintes, with an excellent naval harbour) were the focus of much attention after the collapse of France in 1940 and the subsequent rapprochement of the Vichy regime with nazi Germany. The second foreign ministers' conference of the American republics, held at Havana, Cuba, in July 1940, was concerned primarily with the possible fate of the European possessions in the West Indies and more especially with Martinique which, it was feared, might become with Vichy connivance a clandestine outfitting and supplying centre for submarine warfare in the Caribbean. Martinique was also of interest because of the storage there of large amounts of French gold and the internment at the island of an important aeroplane carrier and numbers of planes. French naval units were kept under close surveillance by U.S. naval and air patrols. Both Martinique and Guadeloupe remained under semiblockade, with most of their external trade confined to the United States. On several occasions during 1941, as the Vichy regime seemed to turn more toward the axis, official and semiofficial statements were made in the United States regarding possible U.S. occupation of Martinique.

Fears that Martinique might become an axis base against the Americas were heightened after formal entry of the United States into World War II. It was officially announced at Washington on Dec. 18, 1941, however, that an accord had been reached with Adm. Georges Robert, high commissioner for the four French colonies in the western hemisphere. The agreement, it was understood, provided for continued trade with the United States in return for pledges that neither French vessels nor nationals would take any action detrimental to the United States. The Vichy government, however, denied any change in the status of the French American colonies. The United States began negotiations with Adm. Robert in May 1942 with the objective of permanently eliminating a weak spot in the U.S. Caribbean defense line. Conversations continued throughout the summer and until after the invasion of North Africa by the Allies, after which Adm. Robert began acting independently of the Pierre Laval government in Vichy. The negotiations resulted in the immobilization of French war vessels at Martinique by the storage of vital parts in the U.S. consulate and the removal of the ships' fuel oil, in return for which the United States guaranteed the neutrality of the French West Indies. The United States continued shipment of nonmilitary supplies to the islands so that they would not suffer from lack of necessities. The local administration apparently remained at least officially loyal to the Vichy regime, however, and broadcasts were reported late in 1942 to be unfriendly to the United Nations. The negotiations were unsuccessful in gaining the release for Allied use of the 140,000 tons of French merchant shipping and tankers tied up at Martinique. During the summer of 1942, 300 Martinique French escaped to join the Free French forces. Refusal of the insular administration to sever its ties with Vichy France and to co-operate as fully as was desired with the American republics led the United States in Nov. 1942 to break off diplomatic and commercial relations with the islands. The result was that for some time thereafter no vessels arrived with supplies.

Adm. Robert, continuing loyal to the Vichy government, held out in Martinique until June 29, 1943, when he requested that U.S. agents be sent to discuss a transfer of authority. After a conserence, Henri-Etienne Hoppenot was named high commissioner of the Antilles by the French committee of national liberation. Adm. Robert resigned as governor on July 13 and by August was on his way to Vichy. The United States then resumed shipments of supplies to the islands, with resulting improvement in conditions, but strict control over profits was retained, and the sale of autos, tires and tubes was carefully rationed. Circumstances continued to improve in the West Indian islands in 1944 but were still far below the normal level of prosperity. Political conditions were quiet after transfer of control to the committee of national liberation. Gov. Hoppenot was transferred from Martinique to another post early in 1944 and was succeeded by Antoine Angelini as acting governor until the appointment of Georges Parisot as governor, made by Gen. de Gaulle in 1944; Parisot did not assume office, however, until Jan. 1945.

The French government made great efforts during the year to restore some part of the commercial activities of its American possessions, especially the West Indian islands. It adopted strict regulations to govern the importation, exportation and distribution of products; persons engaged in foreign trade were organized into import and export groups, with commissions established to direct their activities. A decree of June 2, 1944, created an autonomous exchange control office in each colony. The Paris government on July 28 ordered the requisitioning of all holdings of U.S. dollars which citizens possessed, for deposit in the exchange stabilization fund. Accounts in the United States were transferred to the credit of the particular colony in which the former holder had resided; the exchange rate for the transfer of such funds was at the rate of 50 francs to the dollar. All imports were then governed by the dollar exchange available, and were allocated on the basis of a division of goods into nine categories, such as food, clothing, hardware, industrial machinery, etc. Imported goods could be sold only to retail merchants. Martinique had \$3,000,000 worth of orders in the United States on Oct. 1, 1944, awaiting exchange credits. The general council in Guadeloupe authorized a loan in Nov. 1944 to support an extensive program of public works, begun in 1931 but later suspended. The revised program, work on which was resumed in 1944, called for an expenditure of 240,000,000 francs, and included modernization of the port of Pointeà-Pitre, reclamation of 450,000 sq.m. of flood lands and construction or repair of public buildings, roads and bridges and electric power lines.

The food supply of the Caribbean colonies, which had begun improving after the lifting of the blockade in 1943, continued to enlarge in 1944; some items, such as bread, were removed from rationing. The meat shortage was acute in the summer of 1944, but the supply increased later. The limited amounts of consumer goods resulted in a flourishing black market, however. Newsprint was rationed

in Aug. 1944. Economic conditions in Martinique improved slightly in the early part of 1945 but continued to be affected by a greatly reduced production of sugar cane, the major crop, caused by shortages of equipment and fertilizer. Considerable labour unrest prevailed in Martinique, and the sugar cane grinding season was delayed by wage controversies until the governor decreed a 25% wage increase in March 1945. Two other measures were designed to reduce import prices; one temporarily suspended tariff duties on certain basic food items, and the other cut profit margins for merchants. Guadeloupe, with a more diversified agriculture than Martinique, was in a better position with regard to foodstuffs. French and insular officials gave consideration late in 1945 to a new loan of 200,000,000 francs for a public works program for Martinique.

French Guiana, which had the reputation of being the most poorly developed European colony in the new world, suffered relatively less from the early impact of the war than did the French West Indies. The colony allegedly served in 1941 as a channel for entrance of axis agents into South America. French Guiana suffered less from the vicissitudes which affected the Caribbean colonies as a result of Allied pressure on the Vichy-dominated insular administrations. A bloodless coup on March 16, 1943, led by army officers but supported by the inhabitants, resulted in the overthrow of the established authorities and adherence to the Free French cause. Jean Rapenne was appointed governor of the colony. U.S. and Brazilian military observers arrived at Cayenne at the end of March 1943; much needed supplies soon followed, with a consequent improvement in living conditions. French Guiana was authorized in 1944 to borrow 1,200,000 francs for improvement of port and transportation facilities.

The notorious Devil's Island penal colony was subject to changeable decisions during the decade. The French government had earlier decided that the various penal settlements in French Guiana should all be liquidated within the 15 years following 1936. Crowded conditions in French prisons led in 1938, however, to the deportation of additional prisoners to French Guiana; the colony by 1943 had a convict population of 2,404. The French committee of national liberation decided on March 6, 1944, to reestablish Devil's Island as a prison for those convicted of political crimes, but later in the same year the government

Annamite rebels in the custody of British and French troops in Saigon during the Indo-Chinese insurrection which began in Sept. 1945. Nationalists fought the return of French colonial rule



resolved to abandon the penal settlements; gradual liquidation subsequently began.

In the latter stages of World War II, after Vichy control was removed in the French colonies, the French West Indies and French Guiana were brought into closer relationship with British, Dutch and U.S. possessions in the area with regard to their mutual economic and other problems. Representatives of the Middle American French colonies participated in a Caribbean conference at St. Thomas in the U.S. Virgin Islands, beginning Feb. 21, 1946.

Because of his ill health, the French government on March 14, 1946, released from custody Adm. Georges Robert, erstwhile governor of the French West Indies, who had been held at Paris on charges of collaboration.

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French Indo-China

See French Colonial Empire; Siam; World War II.

French Literature

A characteristic shift in the choice of subject-matter seems to have been the most noteworthy development in French literature during the ten-year period 1937-46. This choice, which did not always result from a deep-felt inspiration, was concerned with the theme of actuality. The poets descended from their ivory towers, the prose writers discovered a reality whose presence they had neglected; and all discovered a mission in the immediate present. The importance, if not the sense, of the actual, already present to a considerable extent in the years preceding World War II, became under the German occupation a personal concern for the majority of writers. The relatively active participation of numerous writers in the Resistance movement had the effect of accentuating adherence to the actual, and brought forth a persistent desire to include reality with poetic dignity. But this "turning toward the real" did not result in epic literature in which the universal vision of the drama of man would be expressed.

Many poets who exclaimed "Our ravaged country," "France betrayed," followed their conception of civic duty rather than a true poetic fervour.

The introduction of the actual into literature resulted inevitably in a relaxation of form in the work. A poet such as Loys Masson, exquisitely sensitive to the enchantment of the tropical forest and to the winds whistling through the masts of sailing vessels, wrote bad verse during the occupation. Louis Aragon, who in his youth had written books which seemed to presage an inspired writer, published, under various pseudonyms, poems which did not entirely excuse the romantic provincial yearning for the cathedral of Strasbourg.

This "taking a stand" which for several years preceded the "literature of participation" of the existentialists, nevertheless inspired certain poets to high poetic achievements. The metaphysical anxiety about the destiny of man, his ultimate end, his attitude in the crisis of a civilization, his relationship with God and with evil—the latter too often confused with the invader, with the German as such—all this was expressed by poets like Pierre Jean

Jouve, Pierre Emmanuel and Michel Leiris with great lyrical force. Through his hopes on behalf of humiliated France, Pierre Jean Jouve showed, in Ode au Peuple and in Chevaliers d'Apocalypse a greater preoccupation with the tragic sense of destiny. In Sueur et Sang, Pierre Emmanuel, inspired more by the epic form and employing a broad rhythmic style, produced mighty works — "Jour de Colère," "Combattre avec les Défenseurs, "Tombeau d'Orphée." A neo-Thomist and ideological disciple of Jacques Maritain, he saw in mediaeval Christianity a type of universal society which he differentiated not only from collectivism but also from acrimonious individualism. On a different plane, more sensual, perhaps more sorrowful and preyed upon by cruel visions, Michel Leiris decried in Haut Mal, the evil of living, the uselessness of effort and struggle and the nostalgia of withdrawing into one's self and vanishing into prehuman nothingness.

With Mots Croisés, published in 1939, Aragon entered decidedly into what the critics were pleased to call his neoclassicism. Cantique à Elsa, Les Yeux d'Elsa, Crève-Coeur, Diane Française and Servitude et Grandeur des Français (the last title taken from Georges Clémenceau) were so many pages which, with rhymes often too audacious to be classic, corresponded to an imagery willfully despoiled, entirely at the service of a theme which became more and more nationalistic and vainglorious. The novel Aurelien, which followed Les Cloches de Bâle and Beaux Quartiers, completed a trilogy with the action taking place in the Paris of 1922.

Simone de Beauvoir, a disciple and associate of Jean Paul Sartre, unknown before World War II, published a type of manual of existentialism, Pyrrhus et Cinéas, a novel, Le Sang des Autres, and a play based on the latter, Les Bouches Inutiles.

Julien Benda, unceasing defender of Cartesian rationalism and of an intellectualism free of irrational sin, had previously published two biographies, La Jeunesse d'un Clerc in 1937, and Un Régulier dans le Siècle. In 1946 his Exercise d'un Enterré Vivant appeared, in which he described his own driving force as a hunger for logical thought. In La France Byzantine (1945), the author declared war on the irrationalism of the art and the "humanitarianism" of André Gide, Paul Valéry, Jean Giraudoux and Marcel Proust.

Georges Bernanos wrote Sous le Soleil de Satan and Les Grands Cimetières sous la Lune (1938); in the latter work he lived up to his reputation as polemical writer. As a Catholic, he used all the heat and anger of his sarcasm in calling to account the "well-meaning" and reproaching them for confusing their social privileges with the teaching of Christ. In his Lettre aux Anglais as well as in his essays published under the title of Nous autres Français (1945) he proved his broadmindedness which permitted him to conclude that the French crisis was inseparable from the crisis of universal conscience.

André Breton, leader of the Surrealist movement, and refugee in the United States from 1941 to 1945, published the de luxe magazine VVV, whose appearance recalled the former Minotaure. Breton also produced a long poem entitled Arcane 17, written in the purest tradition of the school, weaving together imagination and reality. The theme was love and flight from the actual as a refuge from sorrow.

A newcomer in French literature, Albert Camus, was considered a discovery of the decade 1937-46. In his play, *Malentendu*, written in a style and manner which betrayed a solicitude for classicism, he used the theme of

Electra. Another play, Caligula, portrayed a dictator lost in madness. Le Mythe de Sisyphe attempted in essay form to demonstrate the absurdity of human existence caused by the irreparable contradiction between the desires and the will of man on the one hand, and, on the other, the reality of a world which definitely does not take into account man and his desires. In L'Etranger, a short novel with startling laconic language, Camus tried to illustrate this thesis. But the hero does not in reality enjoy a personal existence; he lives by some sort of proxy. He permits himself to be loved, to be hated, and even to be condemned to death without any reaction on his part.

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THE POWERFUL personality of Paul Claudel continued to assert itself during the decade. Claudel's Jeanne d'Arc au Bûcher was produced in Paris in 1939 with a musical background written by Arthur Honegger. During 1941 and 1942, he published in Switzerland Présence et Prophétie, which he had announced as a kind of introduction to apocalyptic "verticalism." Louis Jouvet and his company produced his Annonce faite à Marie during a long tour in Latin America. In spite of his occasional exuberance and abuse of metaphors, Claudel remained the great epic poet of grace, revelation and redemption. His style is broad, full, generous, and rich in deep resonance.

An inquiring imagination, with a taste for jugglery, for the absurd taken seriously and for the serious concealed in a scintillating phrase—these were all the qualities of Jean Cocteau, as in *L'Incendie* (1939), a poem of love set in pre-Munich Paris.

Georges Duhamel, author of Chronique des Pasquier, added regularly to his already large output Le Désert de Bièvres and Les Maîtres (1937), Cécile parmi Nous (1938). In 1941, the Germans banned his Lieux d'Asile. The year 1945 saw the publication of his essays, Inventaires de l'Abîme. Duhamel remained faithful to himself throughout the years, conscientious, sober, unostentatious—identical in his writings with the grayish silhouette of his Salavin.

One of the most gifted and most authentic poets of the period was Paul Eluard, who avoided the Resistance poets' decline into easy sentimentalism. Although he wrote numerous poems during the occupation, he did not sacrifice his art to the needs of the cause. Chanson Complète (1939) seemed to be a milestone in his work, since it marked his estrangement from the Surrealist school and a return to a vocabulary deprived of artifice. Un Seul Nom (1942), Dignes de Vivre (1945), Paris Respirait Encore (1944) and Au Rendez-vous des Allemands (1946) all bore testimony to his lively sensibility, awakened by the magic of the immediate present and the simple. Eluard spoke the language of the street and the field and of the humble desire to be happy.

Léon Paul Fargue, author of Le Piéton de Paris (1939) was the lovesong writer extraordinary of the City of Light, wandering around the streets of Paris, concealing his real tenderness with a sort of sneering exterior. None wrote better than he of railroad stations, crossroads, street lights in the evening, and good-byes at the wharf.

In 1937, La Pléiade (under the direction of Jacques Schiffrin) published André Gide's Journal, which became the literary event of the year. Covering half a century, the Journal contributed appreciably to the inheritance of French literature. It abounds in pertinent analyses and contains an extended biographical index—a boon to future biographers. A second volume of the Journal was added in 1944, including the years 1939—42. In 1943, the volume of his Interviews Imaginaires appeared in Algiers

after prior publication in the columns of Figaro. In 1945 in rapid succession appeared Vie de Thésée and a play Robert ou l'Intérêt Général, in which the characters of his School for Women reappeared. The Théatre Français produced his translation of William Shakespeare's Anthony and Cleopatra, and Jean Louis Barrault created Hamlet in Gide's translation. The author of l'Immoraliste was attacked by a number of communist writers after their conversion to extreme and aggressive nationalism. His attitude, however, was above criticism. In spite of a démarche by Paul Valéry, he refused to lend his name to the Nouvelle Revue Française whose direction had passed back into the hands of Jean Paulhan. During a lecture which he was asked to deliver in Nice about Henri Michaux and which was first banned but then finally authorized by the Vichy legion, he made substantially the following declaration: "I intended to entertain you with a nonpolitical subject-a poet and his work. The legion has graciously authorized me to do so. But since I am not accustomed to speak upon permission only, I ask your favour to permit me to retire. . ." In spite of his great age, André Gide remained the most representative figure of contemporary French literature, and his influence was certain to endure.

The magician of literature, Jean Giraudoux, died in 1944. His posthumous play La Folle de Chaillot was produced by Louis Jouvet, upon the latter's return to France in 1945. In 1938 his Choix des Elues appeared, and in 1943, in Switzerland, his Sodome et Gomorrhe. Giraudoux' work was of a light and graceful architecture, although without foundations.

Max Jacob, who died in prison, exercised a lasting influence upon an entire generation of poets. A master of language, he adapted his style to the inspiration of the hour (Le Laboratoire Central, Chants Bretons, Fond de l'Eau), full of resonance, often burlesque and always moving.

Francis Jammes, of whom André Gide had said that he was blessed by the good Lord, died in 1938 at the age of 70. He was a poet who deliberately chose to be naive, who liked simplicity, knowing how to make his writings simple; he favoured bucolic charm (De Tout Temps à Jamais, Le Pèlerin de Lourdes, La Vierge et les Sonnets, Le Deuil des Primevères).

In an interview granted Labyrinthe (a Geneva paper) André Malraux said that he believed in the formation of a new culture; a culture of the Atlantic (as opposed to the culture of the Mediterranean). Throughout his two novels L'Espoir (1937) and La Lutte avec l'Ange (1943), the author of Voie Royale appeared to have met a metaphysical spectre. "Like the God of Nietzsche, is man dead?" he asks himself. But the myth of the hero, all present in his works, did not disappear from his later preoccupations; nor did the justification of man and the will of liberty.

Jacques Maritain, the greatest theorist and leader of the Neo-Thomist school, spent the war years in the United States. In numerous writings, notably in *Crépuscule de la Civilisation* (1941), he opposed the modern world and its individualistic and practical ethics with a norm of spiritual values. The evil which contemporary man suffered was of a purely intellectual order. Pretended reason and rationalism were the basis of atheistic humanism and of racial antihumanism; they constituted the factors of decadence and found themselves at the very source of social convulsions beginning with the Renaissance and the Reformation. The complete abandonment of individualistic ethics and a return to certitudes, according to Maritain, were the only means of saving humanity and its culture from the corruption of a "pagan empire." These considerations were

taken up by Rev. Henri de Lubac in his Le Drame de l'Humanisme Athée (1945).

François Mauriac belonged to this same school of thought; his entire work revealed one essential preoccupation—the fusion of spirit and flesh. Les Mal Aimés (1945), Les Chemins de la Mer (1939) and Asmodée (1938) were plays and novels expressing this idea. Two of his books were printed in 1945: Sainte Marguerite de Cortone and Le Bâillon Dénoué. His work remained honest and discreet, but without inner radiance.

Henri Michaux revealed himself as one of the most personal and original poets of the decade. Epreuves-Exorcismes and Plume, preceded by Lointain Intérieur and Un Barbare en Asie, were of a surprising and enchanting quality; their unique theme was the search for man and the reason why man is tragic.

Along with Pierre Emmanuel, Patrice de la Tour du Pin took an important place among the young generation of Catholic poets. Inspired directly by Charles Péguy, Du Pin occasionally fell into a monotony and a heaviness caused by overemotionalism. But all through his work—La Vie Récluse in Poésie (1938) and Les Psaumes (1939), to which he added, in order to complete his Summa, La Quête de Joie, l'Enfer, Le Lucenaire etc.—his great epic inspiration dispelled hesitation and overcame abstractness. This young poet in his contemplative and mystic fashion and through esoteric symbolism achieved youthful grace and vigour.

An understanding for finesses and a keen sense of the written word were proper attributes of Jean Paulhan. He was a "discoverer of poets"; while the Nouvelle Revue Française was under his direction, and before it became a collaborationist paper, he collected on his pages the poems of Jules Supervielle, Audiberti, Patrice de la Tour du Pin, Pierre Emmanuel, Henri Thomas. His Fleurs de Tarbes and Clefs de la Poésie were works of analysis and synthesis, which attacked the difficult problem of language and its relationship to thought in poetry. He, better than anyone, analyzed the structure of the commonplace. For the poet, he declared, words and thoughts are absolutely interchangeable.

The father of *Unanimisme*, Jules Romains was elected to the French academy in 1946, after he had spent the war years in Mexico; there he completed his monumental writing *Hommes de Bonne Volonté*, comprising more than 20 volumes. His latest works might be called intelligent and solidly constructed, but lacking true emotions and without even the rustic elegance of the artisan; they were quite inferior to the creations of his younger days: *Copains*, *Bourg Régénéré*, *Comedeyre-le-Vieil*. In 1940 he published *Les Sept Mystères du Destin de l'Europe*, an expression of his fruitless efforts to save the world from catastrophe.

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Among Newcomers in the literary field of the World War II period, Jean Paul Sartre acquired a singular notoriety. Although the author of a volume of short stories, Le Mur, and a novel, La Nausée, he was almost unknown until 1939. But then, as the leader of the school of Existentialism, he gained the spotlight not only because of his numerous publications which followed each other almost uninterruptedly, but also because of his dynamic personality. His two plays, Les Mouches and Huis Clos had their first performances in Paris in 1944. In a series of three volumes, announced under the title Les Chemins de la Liberté, two appeared—L'Age de la Raison and Sursis. L'Etre et le Néant, an enormous philosophical work, became the

bible of the existentialists. In 1946, two other plays were produced, La Putain Respectueuse, based on racial discrimination in the United States, and Morts sans Sépulture with the action centring around the Resistance movement. Tracing its origins back to Sören Aabye Kierkegaard as well as to Martin Heidegger, Karl Jaspers and Léon Chestov, the Existentialist school laid down the axiom that liberty is an attribute of man; that every person is responsible for everything, and that all life is "engaged." Adversaries of the school criticized it for its vagueness—"engaged" in what manner? What was the aim? What values were to be served? A brilliant mind, inventive and gifted with intellectual speculation, Sartre became a true writer of ideas.

Paul Valéry, who died in 1945, was almost unanimously considered the greatest French poet of the period. He formed his rhythms, tuned his songs and created images without comparison. Every word, harmony or assonance in his poetic work was painstakingly and conscientiously balanced. The end he pursued seemed to be the pursuit itself, to an extent that he rejected any expression whose significance and justification might be somewhere else than in its proper measure. His work combined an "avid and disabused" intellect together with the supreme understanding of the word and its extensions.

The poet of popular imagination, St. Pol-Roux, died in 1940. His last work, La Supplique du Christ, took up the defense of the Jews against the race beaters; this was in 1939. In the United States, St. John Perse published strange and surging poems: Exil, Pluies, Anabase, telling the deluded experience of an officious and vain world. Jules Supervielle, who spent the war years in Latin America, wrote poems of an imaginary mythological world. Jean Schlumberger, author of Stéphane le Glorieux, received the grand prize of the French academy for his entire work. André Maurois tranquilly pursued a literary career—the results of which, however, did not compare with his previous works. Denis de Rougemont published La Part du Diable in the United States. Jean Cassou, author of Légion and translator of Cervantes, contributed Trente-trois Sonnets écrits au Secret. Jean Genêt, who was discovered by Cocteau, published a biographical narrative, Le Journal du Voleur (1946), a collection of obscenity and narcissism in the ignoble, which, nevertheless, was of true literary temperament. Péguy, a posthumous work by Romain Rolland, appeared in two volumes (1945). Maurice Blanchot showed himself to be a talented young critic. Le Monde Concentrationnaire by David Rousset, who had been deported as a political prisoner, won the prize of Théophraste Renaudot. Paul Nizan, author of La Conspiration, which won the Interallied prize in 1939, was killed in World War II. Aimé César, a poet from Martinique, contributed in the Tropiques and Les Armes Miraculeuses pages of colour and exuberant language. Robert Desnos, who died in captivity, published his poems under the pseudonym of Valentin Guillois. The great revolutionary poet, Marcel Martinet, author of Les Temps Maudits, Chants du Passager and La Nuit, died during the occupation and left a posthumous novel, Le Solitaire, which was published in 1946. René Char's Seuls Demeurent and Feuilles d'Hypnos as well as Jacques Audiberti's Des Tonnes de Semence were poems of originality.

A fairly important number of writers found themselves cut off from French literary life because of their crime of "collaboration." With the exception of Jean Giono, Henri de Montherlant, and Céline, they belonged to the class of "minor" writers. There were members of the academy,

such as Charles Maurras, Abel Bonnard, André Chaumiex, Louis Madelin and Henri Bordeaux. There were also Roger Allard, the author of Elégies Martiales, and Henri Massis. The slogan "back to the soil," so dear to the paternalism of the Vichy regime, found its standard bearer in Henri Pourrat, who received the Prix Goncourt of 1941 for a piece of writing which was in the nature of a sermon about peasants. Jean Giono, mighty and authentic poet of the soil, was the prophet of a neopaganism pleasing to nazi ideology. Drieu la Rochelle, who committed suicide, Chardonne, Jouhandeau and Ramon Fernandez, who switched successively from communism to royalism, and then to naziism, were all associated with an Academy of Great European Writers, founded at the Congress of Writers of Greater Germany. Henri de Montherlant took part in these activities, although he denounced the kind of literature which became the taste of the day. Robert Brasillach was condemned to death and executed although he was one of the least compromised. Maxence van der Meersch, Cousteau, Pierre Gaxotte, Henri Béraud were all writers with extremist tendencies writing in the Gringoire, Je Suis Partout and Au Pilori, which were known for their inflammatory character and their unreserved subservience to Germany. Claude Farrère attempted to prove in a book called Onzième Heure that Japan was saving civilization in (J. MAL.)

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French Pacific Islands

See Pacific Islands, French.

French Possessions in Africa

See French Colonial Empire.

Frequency Modulation See RADIO.

Freudianism

See Psychology.

Freyberg, Sir Bernard Cyril

Sir Bernard Freyberg (1890—), British army officer, was born in London and went to New Zealand when he was a child of two. He was educated at Wellington college and set up practice as a dentist. Irritated with the monotony of his existence, he went to Mexico during the revolution in 1913. Some sources asserted that Freyberg was an officer in Francisco ("Pancho") Villa's army; others report that he fought against Villa.

Back in Europe at the outbreak of World War I in 1914, he was soon commissioned as a lieutenant in the army. He fought with the British expeditionary force in Belgium and later was transferred to Gallipolli, where he won the distinguished service order.

He subsequently returned to the western front, where he led his men in an attack on Betancourt, although he himself was suffering from heavy wounds. For this achievement, he received the Victoria cross. During World War I he was wounded nine times in all, and was mentioned six times in dispatches. On his promotion in 1917 to a brigadier, Freyberg at 28 became the youngest general in the British army.

At the start of World War II in Sept. 1939 Freyberg was commander of the Salisbury plain area. The following Dec. he was appointed general officer in command of the New Zealand army corps and in 1941 he fought in Greece and Libya and was commander in chief of Allied forces on Crete. Lt. Gen. Freyberg also participated in the North African and Italian campaigns and accepted the surrender of German forces at Trieste in May 1945. Sir Bernard, who was knighted in 1942, was also wounded several times in World War II. It was announced Sept. 4, 1945, that Sir Bernard had been appointed governor general of New Zealand; he assumed his new post in early 1946.

Frick, Wilhelm

Frick (1877-1946), German politician, was born March 12, 1877, in the Palatinate and was a student of the Universities of Munich, Goettingen and Berlin. His affiliations with the nazi party started at the time of the Munich beer-hall putsch in 1923 (he was implicated in the uprising) at which time he was attached to the Munich Police presidency. He later became minister of the interior and minister of public instruction in Thuringia. During this time, Frick sought to make the Thuringian police an armed force for the nazis. When Hitler assumed the chancellorship of Germany in 1933, he brought Frick to Berlin as his minister of interior. In that capacity, Frick ruthlessly suppressed opposition parties, trade unions, the press and the Jews. He was captured by the U.S. 7th army on May 7, 1945, near Munich and was brought to trial as a war criminal at Nuernberg. On Oct. 1, 1946, the International Military tribunal found him guilty of crimes against the peace, war crimes and crimes against humanity and sentenced him to death by hanging. He was executed at Nuernberg on Oct. 16, 1946.

Friends, Religious Society of

In 1946 the Religious Society of Friends (Quakers) was approaching the 300th anniversary of its founding. The society grew out of a spiritual movement originating around the year 1650 in England under the leadership of George Fox. Its central doctrine has always been the Inner Light or Divine Seed in each individual, revealing that which is evil, empowering men to do the good, and uniting individuals with one another and with God, the source of life and light. The society was composed in 1946 of 53 constituent yearly meetings and annual conference groups in all parts of the world. Membership grew from slightly less than 160,000 in 1937 to approximately 164,000 in 1946 (these figures were necessarily based on estimates).

The two major trends in the period from 1937 to 1946 were (1) a tendency toward unity and a growing sense of world community, and (2) developments growing out of the application of the traditional Quaker peace testimony in a world preoccupied with war.

* * *

FEELING the need to implement and strengthen their sense of solidarity in a world rapidly dividing on national and racial lines, Friends held in 1937 at Swarthmore and Haverford colleges in Pennsylvania, a Friends World conference attended by 985 official delegates representing 24 nations. Commissions deliberated and presented reports on the spiritual message of Friends, the individual Christian and the state, methods of achieving economic, racial and international justice, the Quaker contribution to education, and international co-operation among Friends. Out

of this conference emerged the Friends World Committee for Consultation with headquarters in London, functioning through a European, a U.S. and a far eastern and African section (the latter not yet officially constituted in 1946). Owing to the war, full meetings of the committee were held only in 1938 at Vallekilde, Denmark, and in 1939 at Geneva, Switzerland. Regional conferences were held during the war in the United States and Great Britain to discuss subjects such as the spiritual service of Friends in Europe, the orient and the Caribbean. The World committee also promoted intervisitation among Quaker groups in different countries where war conditions allowed, and undertook a program of publications to promote mutual understanding and a sense of interdependence in the world community of Friends. At the end of 1946 the committee was looking forward to another World conference to be held possibly in 1950.

In the western hemisphere, where the majority of Friends were concentrated, signs of unity were increasingly apparent after a century of divisions. The largest single group, the Five Year's meeting (representing 11 yearly meetings in Canada, the United States and Central America), met in regular quinquennial session in 1940 and 1945 at Richmond, Ind. On both occasions fraternal delegates and visitors were present from yearly meetings of other branches. The meeting in 1940, held in the shadow of the coming war, reaffirmed the pacifist position of the Society of Friends and authorized the establishment of a yearly meeting in Jamaica. The meeting in 1945, held just after the cessation of hostilities, authorized the creation of a yearly meeting in Kenya Colony, Africa, where a mission station had been maintained since 1902. Friends General conference, representing six so-called Hicksite Yearly meetings, met biennially at Cape May, N.J., for discussion of Quaker concerns in the fields of education, peace, social service and the advancement of Friends principles. The remaining U.S. yearly meetings, including six conservative groups and four evangelical and fundamentalist groups, co-operated in greater or less degree with other Friends in conferences and in common programs of war relief and provision for conscientious objectors.

The American Friends Fellowship council, established in 1936, was active throughout the period in promoting understanding and a spirit of unity in American Quakerism. One of its principal undertakings was the sponsorship of the Wider Quaker Fellowship, composed of "friends of the Friends"-persons who belonged to other religious groups but who desired fellowship with Friends. The phenomenon of "united meetings"-local meetings affiliated with both Orthodox and Hicksite Yearly meetings-became widespread in the eastern states. Many new meetings, independent of any yearly meeting but affiliated with the American Friends Fellowship council, came into being, especially in university centres. In Canada three yearly meetings began holding concurrent sessions in 1943. The Orthodox and Conservative Yearly meetings in New England, joined by the Connecticut Valley Association of Friends, formed one yearly meeting in 1945. In New York, Philadelphia, and Baltimore, Orthodox and Hicksite yearly meetings began holding regular joint sessions, and in 1946 the two groups in the Philadelphia region came together to form a general meeting under which each yearly meeting would retain its separate identity. Although marked differences persisted in theological emphasis and type of ministry, the tide in many sections of U.S. Quakerdom was setting in the direction of further unity.

During World War II, European Friends were in large measure cut off from each other. British Friends continued active in public life (ten Quaker M.P.'s were returned in the 1945 elections) and in various forms of war relief. On the European continent universal military conscription (with no alternative service for conscientious objectors) made it difficult for the Society of Friends to survive as a body maintaining its characteristic peace testimony. Not a few Ouakers were sentenced to concentration camps for refusing military service. Nevertheless, the German yearly meeting was able to hold regular annual sessions until 1941. During the German occupation of France, French Friends took over the operation of the Paris International Centre, earlier supported by British and U.S. Friends. With the ending of the war, European Quaker groups revived. Their chief postwar concerns, besides relief work, were relations with other churches and the œcumenical movement, the meaning of the Quaker peace testimony in the light of wartime experiences, and attitudes toward Friends and others in former axis countries. Reconciliation and the desire to restore the international community of Friends were keynotes of the addresses issued after the war by several European yearly meetings.

* * *

ALTHOUGH many individual Friends were not wholly consistent, the Society of Friends, speaking through its yearly meetings, upheld throughout the period its traditional testimony against all war and in favour of Christian love and brotherhood. Virtually every yearly meeting reaffirmed its adherence to this principle and worked to strengthen the testimony among its members and to influence public opinion.

American Friends participated actively in the emergency peace campaign in 1937. The peace section of the American Friends Service committee carried on its "peace caravans" and institutes on international relations as a means of educating public opinion on world affairs and the problems of peace and war. Starting in 1939, work camps were held in Mexico, providing projects of a public-service nature on which young persons could volunteer to work as a means of promoting international understanding and good will. Similar work camps on a year-round, summer or weekend basis were also operated in the United States by the social-industrial section.

In 1944 the committee, recognizing the seeds of strife inherent in the U.S. racial situation, established a race relations program, offering educational, counselling, and placement services. After Pearl Harbor, when thousands of U.S. citizens of Japanese ancestry were uprooted by military order from their homes on the Pacific coast and transferred to "relocation centres" behind barbed wire, Friends went to their aid, chiefly by finding new homes and educational opportunities for them. In 1943 the Friends Committee on National Legislation was established to keep American Friends informed on legislative developments at Washington, D.C., such as proposals for peacetime military conscription to which Friends were almost unanimously opposed.

With the coming of World War II and compulsory military training in Great Britain and the United States, many young Friends took the position of the conscientious objector. In Great Britain, 1,282 Friends (35% of the men members liable for service) appeared before tribunals to establish their position; 16% were given complete exemption; 80% were given exemption conditional upon their

performing civilian duties specified by the tribunal; 3% were assigned to noncombatant duties in the army; and 1% were denied the status of conscientious objector. Approximately 150 Friends served prison terms for various offences against the National Service acts. In the United States, although accurate figures were unobtainable, it was probable that a somewhat smaller proportion of Friends of draft age took the conscientious objector position. About 650 entered Civilian Public Service camps, 60 were imprisoned for conscience's sake, and an indeterminate number accepted noncombatant service with the military forces.

English Friends undertook no administrative responsibilities in connection with conscription, although Quakersponsored organizations like the Friends Ambulance unit made use of conditionally exempted conscientious objectors. In the United States, Friends co-operated with the Mennonites and Brethren, the other "historic peace churches," in administering a program of alternative service. Between 1940 and 1945, more than 3,000 conscientious objectors of all faiths served without pay or dependency allotments under the direction of the American Friends Service committee in 20 forestry, conservation and park service camps, and 32 special service units, where they worked in mental hospitals and training schools, public health projects and as human "guinea pigs" in medical research. Friends' participation in the administration of the Civilian Public Service program ended on March 2, 1946, six months after V-J day.

Throughout the ten-year period, Friends were engaged in relief work in some quarter of the globe. During the Civil War in Spain, British and U.S. delegates of the Friends Service council and the American Friends, Service committee carried on nonpartisan relief work behind the lines on both sides of the conflict. With the coming of World War II, relief work became a major concern of Friends everywhere.

In 1939 the Friends Ambulance unit was organized by British Friends to undertake medical work with the army, medical relief and other services. Medical relief work was carried on in bombed sections of London, and relief teams were sent to Finland, the middle east, North Africa, Italy, France, India and China (where in conjunction with Canadian, New Zealand and American Friends they hauled medical supplies over the Burma road and staffed civilian hospitals). The Friends War Victims Relief committee was set up by a London yearly meeting in 1940 to co-ordinate work already being done by Friends to alleviate suffering caused by air raids. In 1943 the committee, reconstituted as Friends Relief Service, undertook overseas relief work which eventually extended to Egypt, North Africa, Palestine, Spain, Italy, Germany, Holland, France and the Greek islands.

Throughout the war German Friends aided refugees and English and French prisoners of war. French Friends worked chiefly with civilian prisoners and refugee children. When U.S. Quaker workers in the south of France were interned by the Germans in 1943, the extensive program of relief work among political prisoners and refugees was taken over by Secours Quaker, a French organization. Because of their known neutrality and good faith, Quaker workers were allowed to continue their services to political prisoners throughout the Vichy, nazi and De Gaulle regimes.

The American Friends Service committee, through its office at Lisbon, Portugal, helped hundreds of refugees to escape from nazi Europe. Other U.S. Quakers worked with political prisoners in North Africa and with Yugoslav refugees in Egypt. Milk, vitamins, and anti-malarial

drugs were sent in great quantities to Bengal during the famine of 1943. With the end of the war and the spread of famine, a tremendous and tragic opportunity came to U.S. Friends. A unit of trucks and drivers was formed to transport food and building supplies in Europe where transportation had broken down. U.S. Quakers helped to rebuild ruined homes in Finland and Italy, and provided food, clothing and medical supplies in Germany, Austria, Poland and Japan. Everywhere they went, Quaker workers sought to bring, in addition to material relief, a message, spoken or unspoken, of Christian love and reconciliation to the people of a world not yet released from the throes of violence and hatred.

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Frings, Joseph

Cardinal Frings (1887—), archbishop of Cologne, was born at Neuss, Germany, on Feb. 6, 1887. He was ordained priest in 1910, and served as rector of the Major seminary at Bensburg for many years. Named archbishop of Cologne in 1942, he condemned nazi atrocities. He remained with his flock despite severe bombings of the cathedral city until 1944, but returned again in March 1945 when he was reported held by the nazis. After the end of the war, he laid plans to restore the famous Cologne cathedral to its former splendour by 1948, the year of the 700th anniversary of its foundation. He was proclaimed a cardinal by Pius XII on Feb. 18, 1946.

FRR (Office of Foreign Relief and Rehabilitation Operations)

See WAR AND DEFENSE AGENCIES.

Fruit

The total crop of the 18 principal fruits grown in the United States increased to a new high level during the decade 1937-46. This increase was due to the rapid expansion of the citrus crops, oranges and grapefruit. The total tonnage of the eighteen fruit crops in 1937 was estimated by the U.S. department of agriculture at 14,630,000 tons, of which 2,776,000 tons were oranges and 1,198,000 tons grapefruit. In 1944, the comparable totals were 17,022,000 tons for all fruits, 4,506,000 tons of oranges and 2,032,000 tons of grapefruit. The relatively low prices for several years and the economies of large-scale operations tended to concentrate fruit production into larger units in commercial areas. The pruning, spraying and fertilizing operations improved yields in favourable years and prepared the industry for expansion, particularly in the citrus areas. Other than citrus, the total of the crops continued at about the average total of 1925 to 1935. The tonnage of citrus, oranges, grapefruit and lemons, was 45% greater in the five years 1939-43 than in the previous five years. Large citrus plantings were made in the 1920s and 1930s, that were coming into fall bearing at the end of the decade 1937-46. Most of these trees were yet relatively young and would continue to increase the crop. Authorities had warned against heavy surpluses for several years and the demand during World War II probably prevented a disastrous glut of citrus in the early 1940s. Apples declined moderately in total production and were surpassed by oranges in tonnage. Grapes, third in importance, increased slightly. Cherries and figs increased, but peaches, plums, prunes and apricots remained about the same. The increases in the west were fairly rapid while in the old fruit areas of the North Atlantic states production declined. Planting of trees during the latter part of the decade provided the base to mountain production under improved culture.

Apples.—The U.S. apple crop was one of the few crops which declined in quantity during the decade, and particularly during the war years. Since apple trees cannot be brought into bearing quickly, the area of the orchards in the prewar period determined the output. Between 1919 and 1938 the total U.S. crop had varied from 95,000,000 bu. in 1921 to the biggest crop, 229,600,000 bu., in 1926. After 1938, estimates were restricted by law to the commercial crop. In 1937, the total crop was put at 210,783,000 bu. and the commercial crop at 156,376,000 bu., the difference being farm production of which only a small part left the area of production. The commercial crop almost reached 143,085,000 bu. in 1939, the same as in 1935, and then declined to an average of 119,046,000 bu. during the period 1934-43. The crop of 1945 was the smallest on record, only 68,042,000 bu. This low output was due to a spring freeze and bad weather for pollination in the eastern states. Insect and disease damage was also high. The eastern apple states usually had produced nearly two-thirds of the total crop, but in 1945 yielded less than one-third. The 1946 crop returned more to normal and was estimated at 121,520,000 bu. in December.

Farm prices of the commercial crop of apples were at the low average of 64 cents per bu. in 1937 and advanced to 96 cents by 1941, then to \$2.39 in 1943. During 1944–46, prices were at ceilings—about \$3.60 per bu. in the first half of 1946. The price in mid-1946 varied from over \$5 per bu. for New England to \$3.53 for the northwestern crop. Ceiling prices were adjusted upward as a "disaster" allowance in June and July, 1945, at the rate of 30 cents per bu. The government issued "set-aside" orders in 1945 in order to get adequate supplies for military and other government uses, reducing the civilian supply to less than one-half bushel per capita, which was about 30% lower than the prewar average.

Exports of apples ranged from 10,000,000 bu. to 29,300,-000 bu. before 1937, when the net exports were 15,511,000 bu. Exports rose to 17,761,000 bu. in 1938 then dropped rapidly to a low of 567,000 bu. in 1944. In 1945, exports were restricted to the quantities authorized by the government. Foreign markets provided the best outlet for the smaller sizes of apples for several years. The short crops reduced the quantity of apples available for processing, since normally about three-fourths of the crop had been sold for use as fresh fruit. The strong consumer purchasing power was also a factor in supporting the fresh fruit market. Usually about 10,000,000 bu. were canned, 6,500,-000 bu. dried and 10,000,000 bu. used in other processed products such as cider, vinegar, juice, jellies and frozen products. Imports of Canadian apples were particularly large in 1944, amounting to 2,396,000 bu.; previously they had not exceeded 588,000 bu. after 1921.

World apple production outside the United States was confined largely to Canada, with an average of about 13,000,000 bu. 1931-35, and Europe, with an output of 240,000,000 bu. during the same period. In Europe most of the crop was produced in France, Germany, Switzerland and Italy. The United Kingdom crop seldom exceeded

10,000,000 bu. The world crop was estimated at about 519,000,000 bu. in 1935-39 and 349,000,000 bu. in the 1945-46 season. In spite of this small crop, world apple production was well maintained and increased in some countries. The European crop was 238,000,000 bu. in 1945, compared with a prewar average of 350,000,000 bu.

Table I.—U.S. Apple Production by Leading States, 1937–46 (In millions of bushels)

		fur man	0113 01 0	03116137				
	1937	1939	1941	1942	1943	1944	1945	1946*
U.S. Total	156.3	143.0	122.0	128.2	85.0	124.7	68.0	121.5
Washington	29.3	26.0	26.8	27.3	23.0	31.1	26.9	31.6
Virginia	14.8	10.8	11.8	14.0	5.5	14.5	3.9	13.6
New York	21.5	24.6	16.3	18.9	13.6	17.0	2.1	15.3
Pennsylvania	11.5	10.9	8.6	10.0	5.0	9.1	2.4	9.3
California	9.3	7.3	7.7	5.9	8.7	6.1	10.5	7.4
Michigan	10.0	10.5	8.0	9.2	5.8	7.6	1.2	7.8
West Virginia	6.3	5.6	1.6	1.0	2.0	4.3	1.9	4.5
Oregon	3.3	3.4	2.4	2.6	2.6	4.3	2.8	3.3
Illinois	4.3	4.1	3.9	3.4	2.7	2.4	2.6	3.4
Ohio	8.5	8.7	6.0	6.3	2.4	5.3	.9	3.0
New Jersey	4.8	4.2	8.6	10.0	2.0	2.0	1.2	2.3
North Carolina	1.6	1.1	1.6	1.0	.4	1.7	.2	1.7
Massachusetts	2.6	2.8	2.4	3.4	2.2	2.7	.4	1.5
Maryland	2.4	2.3	1.9	2.2	.8	1.8	ه.	1.8
Idaho	3.9	2.5	2.4	1.7	.6	1.9	2.4	1.8
Colorado	1.2	1.0	1.5	1.5	1.1	2.0	1.2	1.2
Connecticut	1.6	1.3	1.4	1.9	.8	1.5	.5	1.1
Indiana	2.5	2.0	2.2	1.3	1.0	1.3	.8	1.3
Missouri	2.7	2.1	1.5	1.0	.9	.6	.8	1.0
New Mexico	.8	.6	.6	.7	.8	.7	.4	.9 .9 .7
Wisconsin	.8	.6	.8	.7	.8	.8	.3	.9
Arkansas	1.6	.6	.9	ه.	.5	.5	.3	.7
Delaware	2.3	1.6	.9	.9	.5 .7	.8	.3	.8 .7
Maine	.7	1.0	.6	.8	.7	.9	.1	.7
*Preliminary estimate	•							

Apricots.-As usual, the U.S. apricot crop was ninetenths a California production, with Washington and Utah adding most of the remainder. The crop increased slowly in California after 1900 and most rapidly in Washington and Utah after 1925. In 1937, California had a record crop to that date of 311,000 tons, Washington 10,100 tons and Utah about 1,600 tons. In 1938 another higher record was made with increases in all three states. In 1942, the California production dropped to 80,000 tons, Washington had 15,400 tons, and Utah made a new high record of 10,100 tons. The crops then jumped to a new high record of 354,000 tons because of a high production in California. About half of the crop was dried, one-fourth canned and 15% sold for fresh consumption. The amounts frozen increased after 1942. Exports of the canned and dried product averaged more than 65,000 tons in terms of fresh fruit after 1937. During the decade 1937-46, prices advanced from a national average of \$38 per ton in 1937 to \$132 per ton for the short crop of 1943 and about \$95 during the remainder of the decade. Ceiling prices were adjusted for dried apricots to encourage maximum production, to meet war needs and to return an average of \$560 per ton for all states. In 1944 the average in California was \$610 per ton.

Avocados.-U.S. production of avocados expanded in both California and Florida after 1937, when total production was estimated at 7,400 tons. California produced 5,300 tons and Florida 2,100 tons. Previous to 1929 this crop was important only in California, and total production was less than 1,000 tons. Total production in the United States increased in 1938 to 17,000 tons, and in 1943 to the high record of 25,900 tons. Most of these increases were in the California crop. The crop was poor in 1944, only 14,000 tons, but in 1945 rose to 22,400 tons and in 1946 to 16,400 tons. The prices of avocados increased after 1941 to the level of earlier years when the fruit was a high-priced delicacy. California producers received an average of \$152 per ton in 1937 and \$500 per ton in 1944, when the crop was much below the average of the decade. The Florida fruit advanced from an average of \$95 in 1937 to \$140 in 1944. Imports averaged about 5,000 tons

annually until 1941, when they dropped to about 1,000 tons average.

Bananas.-World banana trade was at a high level in 1937, with 120,000,000 bunches entering foreign trade. With the outbreak of World War II, exports fell to 94,-000,000 bunches in 1939 and declined further to 30,000,000 bunches in 1943. With improved shipping conditions, however, the total trade rose to 35,000,000 bunches in 1944 and 40,000,000 bunches in 1945. The United States was the world's largest importer, usually taking half of the exports and four-fifths of the volume in the war years. In 1937, imports into the United States amounted to 66,587,-000 bunches, the highest in ten years. Imports declined steadily to a low volume of 27,228,000 bunches in 1943. Recovery of the trade was slow after the war's end, but by 1945 over 40,000,000 bunches arrived. The chief handicaps to the trade were the loss of the special banana ships during the war and the growers' troubles when they lost their markets. About 83% of the world's production remained in Central America, the rest in Africa, Asia and Oceania." The industry probably would not completely recover for several years.

Cherries.-The cherry crop expanded in the United States during the decade 1937-46 and established a new high record in 1944 and a still higher average in 1946. The total production of all varieties, sweet and sour, was estimated in 1937 at 144,030 tons. In 1939, the crop was 177,580 tons, in 1944 201,590 tons; in 1945 140,660 tons and in 1946 215,360 tons. Of the 1944 crop, 85,300 tons were sweet varieties mostly grown in the Pacific states, and 116,790 tons were sour varieties, of which Michigan produced 50,000 tons and Wisconsin 15,000 tons. The big crop of 1944 was largely due to the big crop of the sour varieties in Michigan, which was about 15,000 tons above the average of 1938-42. The spring weather was very favourable in the Great Lakes region in 1944. The production of sweet cherries was less variable because weather hazards are less in the Pacific states than in the east. Of the sweet varieties, about half were sold to be consumed fresh while only a third of the sour varieties were consumed immediately. Imports of cherries were not important and almost ceased during World War II. Prices of all varieties were at an unusual high in 1937, averaging \$104.42 per ton for the whole crop. The average of 1038-40 was \$68 per ton, followed by a rise each year to \$212 per ton in 1944. In May 1945 price ceilings were removed and prices rose until mid-June, then declined. For the first time, sour cherries at \$260 per ton came near to sweet cherries at an average of \$272 per ton. This high price was due partially to the scarcity of all fruits in the eastern markets.

Cranberries.—An all-time high record production of U.S. cranberries was established in 1937, after which the crop dropped back to the general level of the previous 20 years. The acreage of cranberries, requiring special soils or bogs for profitable yields, reached a total of 27,000 ac. in 1913, and continued at about this level except for occasional years until 1924, when the acreage increased to about 27,500 ac. In 1937, the crop was harvested from 27,840 ac. and in 1941 it expanded to 28,140 ac. and continued at this level to 1946. The production varied during all this period because of fluctuating yields, which ranged from a low of 13 bbl. per ac. in 1944 to a record of 31.5 bbl. per ac. in 1937. Yields had increased slowly after 1917 and averaged about 28 bbl. per ac. during the period 1937-41. Two years of low yields were recorded in the decade, but the average was above that of the prewar period. The low average was due to the great loss of the crop in Massachusetts, which usually had produced about two-thirds of the national total.

The total U.S. crop was 877,300 bbl. in 1937, because of the high yield, and in 1946 the harvest amounted to 846,200 bbl. while the average of the period was about 640,000 bbl. Variations in the crop from region to region were more characteristic than in the total crop. Practically all cranberries continued to be grown in five states—Massachusetts, New Jersey, Wisconsin, Washington and Oregon. Following the good year 1937 in all states, New Jersey and Wisconsin had less than half a crop in 1938. The next year, 1939, all improved together. In 1942, Massachusetts made a high record which swelled the United States total to a near-record, but in 1944 the Massachusetts harvest dropped to about one-third the average and made the smallest United States crop in 20 years.

Prices of cranberries fluctuated widely with the size of the crop. Since most of the crop was consumed fresh, a surplus depressed prices. The record crop of 1937 sold for an average of \$8.75 per bbl. while a year later a crop half as large sold for \$10.98 per bbl. As consumer buying power increased in 1944, prices rose to \$24.10 per bbl. but in 1945 dropped to \$18.40. About one-third of the crop was processed, i.e., canned or jellied, previous to 1937. After World War II began the proportion increased slightly. In 1944, about 155,000 bbl. of the crop of 369,700 bbl. was processed. Some relationship to cranberry demand was evidenced in the steady increase in turkey consumption. Increased consumer income available to buy higher-priced foods was also a factor. Cranberries do not rank high as a food, but the universal association with turkey made them a luxury food.

Dates.—Production of U.S. dates began to be important in comparison with imported dates during World War II. The date-growing industry had developed slowly after 1912 and did not produce 1,000 tons until 1930. By 1936, production was up to nearly 4,000 tons and then dropped to 3,630 tons in 1937. Bigger crops followed, up to the 1944 record of 13,140 tons, only to be followed by a poor crop of 4,520 tons in 1945. About 95% of the crop was grown in California. Imports of dates declined from 35,000 tons in 1925 to 25,822 tons in 1937. The low point was reached in 1943, when only 324 tons were imported; in that year the U.S. crop was 10,770 tons. In 1944, imports increased to 11,637 tons which, with the big U.S. crop of 13,140 tons, provided a domestic supply well up to the average of the prewar years. Prices advanced from an average of \$120 per ton in 1937 to \$530 per ton in 1944, and declined in 1946 as imports became available. During the decade 1937-46, the date-growing industry became firmly established.

Figs.—The growing of figs in the United States continued to be confined almost wholly to California and Texas. In California figs had been grown in commercial quantities for many years, but Texas had not come into the market until about 1920 and reached a peak of production in 1928, followed by a decline that continued through 1946. The total U.S. crop in 1937 was 99,710 tons fresh basis, of which 98,100 tons were grown in California and 1,610 tons in Texas. The California crop increased almost year to year until 1944, when the crop was 124,600 tons while the Texas crop was down to 750 tons, making a total crop of 125,350 tons. Most of the California crop was dried; in 1944 more than 105,600 tons of fresh figs were processed into 35,200 tons of dried figs. Nearly all of the Texas crop was used for commercial preserving. U.S. imports of dried figs averaged about 3,000 tons per year before 1937 except prior to 1929, when imports averaged above 15,000. Prices of California dried figs advanced steadily from an average of \$68 per ton in 1937 to a top of \$292 per ton in 1943. Texas fresh figs sold for \$60 to \$158 per ton in the same years. The premium on the dried product began with the war in 1941 as figs were included in military food supplies.

Grapefruit.—The U.S. crop of grapefruit made a sudden increase in 1936 to a new high level of production, the result of constantly increasing planting during several previous years. From a crop of 18,347,000 boxes harvested in 1935, the crop increased to 30,070,000 boxes in 1936 and then maintained an average of more than 40,000,000 boxes to 1946, including the record crop of 67,000,000 boxes in 1946. The greatest increase was in Florida and Texas, with smaller gains in California and Arizona. About half the crop of 1945 was grown in Florida. The hurricane of Oct. 1944 was estimated to have destroyed more than 15,000,000 boxes of Florida grapefruit. Somewhat less than half of the Florida crop was of the seedless varieties, although these varieties increased most rapidly. Texas production, usually about one-third of the national crop, increased rapidly, while in California the gain was less spectacular. The government advised against the expansion of grapefruit plantings for several years previous to 1937 with only moderate effect. The growing demand for the fruit was remarkable. Demand during World War II absorbed the increasing output without serious losses and at almost constantly increasing prices.

The price of grapefruit to growers averaged 57 cents per box in 1937 and dropped to 32 cents in 1938, followed by a constant advance to \$1.69 in 1944. Prices had been relatively high from 1924 to 1929, when they dropped to an average only half as high; this level continued through 1940, possibly as the result of over expansion of production from 1930 to 1940. Warnings were issued in 1946 that the end of the war would bring a return to the price level of the 1930s unless new marketing methods or export outlets were developed. The competition of oranges was increasing as production of the fruit was expanding rapidly.

Imports of grapefruit, principally in the form of canned segments and juice from Puerto Rico, amounted to the equivalent of 288,000 cases in 1937 but dropped to nothing in 1942. Exports greatly exceeded imports, amounting to more than 1,000,000 cases in 1937 and declining to about 740,000 cases in 1943.

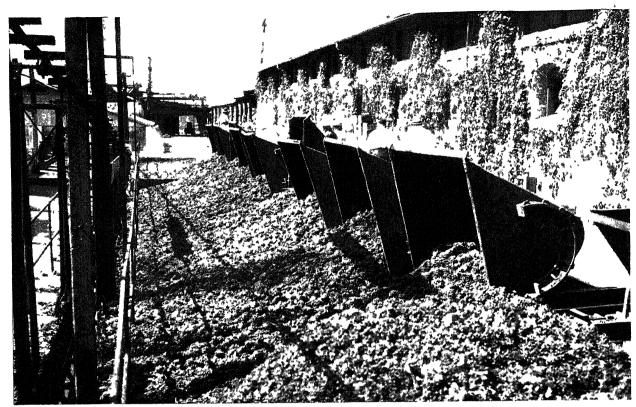
World grapefruit production increased rapidly, largely because of the expansion of the U.S. crop, which amounted to about 97% of the world total. The other producing areas, in order of importance, were Puerto Rico, Palestine, South Africa. World trade was reduced to about 2% of the world production during the war, confined to the United States and Palestine.

Table II.—U.S. Grapefruit Production by States, 1937–46

				. (DOXES				
			1937	1939	1941	1942	1943	1944	1945	1946
U.S. Total .			31.1	35.1	40.2	50.4	56.0	52.1	63.0	67.3
Florida .			14.6	15.9	19.2	27.3	31.0	22.3	32.0	34.0
Texas .		٠	11.8	14.4	14.5	17.5	1 <i>7.7</i>	22.3	24.0	25.5
Arizona			2.7	2.9	3.3	4.0	4.0	3.7	4.1	4.3
California			1.9	1.9	3.1	3.0	3.3	3.7	3.4	3.5

Grapes.—The production of grapes in the United States increased steadily up to 1937 and at a somewhat slower rate thereafter until 1943, when a high record crop was harvested.

Grapes continued to form the second crop in tonnage, next to apples, in the deciduous group of fruits. California, usually producing nine-tenths of the United States



The U.S. grape crop reached record heights in 1943, with the greatest increase of growth in California. This picture shows carloads of grapes being unloaded at Guasti, California

crop, harvested 95% of the total crop in 1945.

The California crop was 58% raisin varieties, 23% wine varieties and 19% table grapes. Most of the grapes produced in other states continued to be used fresh. Practically all the raisins produced in the United States were dried in California. Most of the California crop was used for the purposes for which the varieties were best adapted, viz., raisin varieties for raisins and wine varieties for wines, except that some raisin groups were crushed for wine and brandy. The Washington crop was used principally for juice and wine in 1944-46 and a considerable portion was preserved frozen. New York grapes were largely crushed for juice, only about 8% being sold for consumption as fresh fruit. The big Michigan crop was used principally for juice. Most of the production outside of the

nine leading grape states was consumed as fresh fruit. The total U.S. crop in 1945, 2,791,000 tons, was divided as follows: consumed on farms, 26,490 tons; sold fresh, 533,200 tons; canned, 11,000 tons; dried, 969,200 tons; crushed for wine and sweet juices, 1,239,760 tons. Raisin production showed the most rapid increase after 1937. The bearing acreage of grapes did not increase much during the decade 1937-46, but better yields were harvested as the result of more fertilization and care. New plantings in

Washington increased the crop of that state. Old plantings in the eastern states showed a declining yield.

Prices of table and wine grapes made the greatest advances during the decade. Table grapes averaged \$21.80 per ton in 1937 and rose to over \$100 per ton in 1944 and 1945. The wine varieties advanced from \$21 to \$111 per ton in 1944 while raisin grapes, which averaged only \$17.80 per ton in 1937, declined in price until 1940 and then advanced to \$52.30 in 1944.

Grape production for raisins was stimulated by a government support program during the war period. Payments to producers, subsidies to maintain raisin prices to consumers at reasonable levels, and ceiling prices for grapes sold for fresh consumption were the principal measures used. The government required the raisin crop of 1944 to be set aside in order to ensure an ample supply for military and lend-lease requirements. This reduced civilian

Table III.—U.S. Grape Production by Leading States 1937-46

												(in fi	housands o	f tons)					
												1937	1939	1941	1942	1943	1944	1945	1946*
U.S. Total												2,777.	2,525.	2,727.	2,402.	2.972.	2,736.	2,791.	2,820.
California													2,228.	2,547.	2,160.	2,789.	2,514.	2,663.	2,606.
New York					٠				٠			89.1	75.6	47.6	69.6	39.2	59.3	31.3	63.2
Michigan												67.2	38.1	26.7	46.0	42.4	34.0	13.5	31.0
Washington .												4.1	5.7	12.8	14.9	15.0	17.3	19,4	19.9
												26.0	23.2	12.5	21.5	15.3	19.5	6.0	18.5
Ohio												37.8	42.8	14.8	22.4	17.9	24.4	6.4	17.6
Arkansas									٠			12.8	8.2	10.7	8.4	7.3	10.6	5.2	10.1
Missouri												12.3	12.5	7.7	7.2	5.2	6.5	6.5	6.0
North Carolina												8.1	7.5	5.8	6.4	5.2	6.6	3.7	6.0
Oklahoma					٠							4.0	3.2	3.1	3.1	2.3	3.2	2.5	3.5
Kansas												3.4	4.1	2.1	3.6	2.2	3.3	4.5	3.8
lowa	٠	٠								٠		5.0	5.8	2.4	3.2	2.9	3.1	3.0	2.3
Illinois						٠				٠		8.8	8.8	4.3	4.3	2.9	3.7	3.3	2.7
Texas				٠							٠	· 2.9	2.8	2.4	2.2	2.2	2.1	2.1	2.4
Georgia	٠											1.9	2.0	1.2	1.4	1.1	2.2	2.3	2.3
Oregon				•							٠	2.1	1.7	1.7	1.8	1.8	2.3	2.3	2.3
Tennessee												2.6	2.2	3.0	2.7	2.0	2.3	1.9	2.2
Indiana		٠										5.3	4.8	2.8	2.8	2.1	2.5	1.4	2.0
New Jersey .												4.0	3.1	2.5	2.6	2.1	2.6	.9	2.0
Kentucky		٠										2.9	2.7	2.4	2.0	1.8	1.9	1.1	1.8
Arizona												.8	J	.8	J	1.4	1.5	1.0	1.4
South Carolina	٠		٠						٠			1.9	2.0	1.2	1.4	1.1	1.2	1.4	1.3
Virginia												3.0	2.6	1.7	1.9	1.1	1.8	.2	1.3
Alabama												1.6	1.7	1.4	1.4	1.1	1.5	1.5	1.3
Delaware	٠				٠	٠		٠	٠			2.2	2.0	1.2	1.2	1.0	1.2	.4	1.2
*Preliminary esti	me	ate																	

supplies for that year about one-fifth, leaving less than an average of 3 lb. per capita for civilians. A considerable part of the output of grape juices was also taken for military requirements. Exports of fresh grapes amounted to about 35,000 tons in 1937 and declined to about 23,000 tons during the war years. Exports of raisins increased from 76,000 tons to 104,000 tons in 1944.

World grape production at the beginning of the decade was at a high level in Europe and declined as the war progressed after 1940. Most of the European crops continued to be wine grapes. Since wine was not considered a food, reliable statistics were not published during the war, and the actual changes in each country were not generally known. World production of wine (q.v.) was estimated at about 4,500,000,000 gal. in 1937.

Lemons.—The California lemon crop, amounting practically to the U.S. total, increased after 1937, making its high record in 1940, when a crop of 17,236,000 boxes was produced. The average crop before 1937, about 6,500,000 boxes, rose to an average of 11,337,000 boxes during the period 1934–43. Prices of lemons were relatively high previous to 1937 and dropped to a lower level from 1937 to 1940, when they brought growers only \$1.23 per box. By 1943 the average price advanced to \$3.27 per box and then declined to \$3 per box in 1946.

Imports practically ceased in 1938. The United States became the largest producer of lemons in 1939, surpassing Italy, the only other important lemon-growing country. These two countries produced about 80% of the world total. Italy ordinarily exported most of its surplus to European countries and Great Britain. Lemon production expanded slowly in Palestine and Spain. The world's crop was estimated at 32,942,000 boxes in the record year 1940.

Limes.—Almost entirely confined to Florida, the production of limes averaged about 25,000 boxes until 1937, when it increased suddenly to 70,000 boxes. The average of 1934-43 rose to 93,000 boxes and then increased rapidly to 250,000 boxes in 1944. This increase was the result of closer picking and favourable seasons. Mexico continued to be a large producer of limes. Imports into the United States reached the high record of 145,000 boxes in 1936, then dropped steadily to an average of about 50,000 during the war years. Prices to growers declined from a season's average of \$3.25 per box in 1937 to \$2.10 in 1941 and then advanced to about \$5 per box in 1943-46.

Olives.—World production of olives, centred around the Mediterranean Sea—in Spain, Italy, Greece and North Africa—increased slowly in most of the older olive-growing areas as better tree culture was introduced. World trade continued to be confined largely to the oil. There was little net export trade; countries like Italy and Spain, with high oil consumption, imported cheaper oils to replace the higher grades exported.

The United States olive industry continued unable to supply domestic needs. The California olive crop continued to account for more than 99% of U.S. production. The olive tree requires a long period of growth to come into bearing and the crop is not subject to quick increase except by more careful harvesting. U.S. olive production expanded slowly from an output of around 8,000 tons before 1922 to an average of about 20,000 tons before 1937. In 1937 a crop of 28,000 tons was harvested, followed by a succession of large crops more than double the pre-1937 average. The growers anticipated the need for oil that would follow a war in Europe and by close harvesting gathered a record crop of 69,000 tons in 1940. This was followed by three big crops of over 55,000 tons in 1941, 1942 and 1943, 42,000 tons in 1944, 31,000 tons in 1945,

and 46,000 tons in 1946. The advance in the price of olives was spectacular. From \$67.60 per ton to growers in 1937 the price rose, except for a decline in the one year 1938 to \$45.80 per ton, to \$200 per ton in 1944.

The larger part of the U.S. crop was crushed for oil in the decade 1937–46. Of the record crop in 1940, 39,100 tons were crushed, 16,200 tons canned and 12,000 tons utilized in other ways. The decline in U.S. imports of olive oil after 1940 accounted for the increase in crushings of the domestic crop. The premium price on the oil was also a factor.

Oranges.—World orange production was estimated at an average of 176,320,000 boxes during the period 1930–34; thereafter it increased to 233,929,000 boxes in 1940. Then followed a small decline in most countries during World War II but the large U.S. crop held the total up to 230,170,000 boxes in 1944. Oranges accounted for about 73% of the world's total citrus production and the United States grew 49% of the world crop, Spain 8%, Brazil 9%, Italy 5%, Palestine 3% and the remaining 26% in several other countries. The prewar trade took about 20% of the crop with the United Kingdom importing about one-third of the total. The principal exporting countries before the war were Spain, Palestine and the United States.

The U.S. production of oranges expanded rapidly during the decade 1937-46 and had more than quadrupled since 1919; with grapefruit, oranges were almost equal in tonnage to all other fruits combined. This great increase was under way long before World War II, and the enlarged output was the result of young trees coming into bearing and the large growth of the older trees. The distribution of the crop continued to be in five states, California, Florida, Texas, Arizona and Louisiana, in the order named. The California crop was about one-third larger than the Florida crop during the decade with the other three states supplying only about 5% of the total crop. The increase was somewhat more rapid in Florida than in California, however. Texas more than trebled its production from 1937 to 1944. The Florida crop was about evenly divided between early and Valencia varieties, while in California the Valencias were almost double the volume of Navels and other kinds. The Texas, Arizona and Louisiana crops were mixed. The principal crop loss of the decade was in Florida in Oct. 1944, when a hurricane destroyed about 20% of the early crop.

Prices of oranges reached the low level of two decades in 1938, when they averaged only 79 cents per box to the growers following the increase in the total crop from 54,500,000 boxes in 1936 to 74,200,000 boxes in 1937, and another big crop in 1938. The market strengthened in 1939 and advanced steadily to an average of about \$2.50 per box during the years 1942-44. Exports ranged from 3,000,000 to 7,500,000 boxes during the decade, principally to Canada until the war, when quantities were shipped as juice by lend-lease and to foreign military areas. Imports were never important.

The quantity of U.S. oranges processed for juice and canning increased steadily from 5,800,000 boxes in 1937 to almost 10,000,000 boxes in 1940. During the war years the demand for juice and pulp increased so that by 1944 more than 23,542,000 boxes were processed, leaving about 84,200,000 boxes to be used as fresh fruit.

The civilian consumption of citrus fruits increased from a prewar average of 48.3 lb. in 1935-39 to 68 lb. in 1944 and 65 lb. in 1945. This included both oranges and grapefruit. At the same time, the consumption of canned fruit

juices rose from 4.1 lb. per capita, prewar average, to 10.3 lb. in 1945. During the war years, the military and lendlease took large quantities amounting to about 30% of the total supply of U.S. canned fruit juices.

Table IV.—U.S. Orange Production by Principal States, 1937–46.
(In millions of boxes)

			1937	1939	1941	1942	1943	1944	1945	1946
U.S. Total .			74.2	75.6	85.1	89.3	103.0	100.3	107.3	120.2
California			45.9	44.4	52.1	44.2	51.9	44.1	51.3	52,1
Florida .			26.2	28.0	27.2	37.2	46.2	49.8	50.0	61.0
Texas			1.4	2.3	2.8	2.5	3.5	4.8	4.5	5.5
Arizona .	٠	٠	.3	.5	ه.	.7	1.1	1.2	1.2	1.2
Louisiana	•		.2	.2	.1	.3	.2	.3	.3	.3
Alabama	•		.07		*					
Mississippi		٠	.06	.05	*		• • • • •			

*All trees killed by freeze in 1940. No reports after that year.

Tangerines.—The Florida tangerine crop, and small quantities grown in California, Texas, Arizona and Louisiana, became a more important U.S. citrus product during the decade 1937–46. Florida's production increased from 2,300,000 boxes in 1937 to 5,200,000 boxes in 1946. Practically all the crop was consumed as fresh fruit at advancing prices which compared closely with the prices of oranges, the tangerine's principal competitor. Also grown in Italy in quantity, and to some extent wherever oranges are grown, tangerines had never made an important market for themselves in competition with oranges.

Peaches.—The production of peaches in the United States had been increased for many years. Two record crops, 81,500,000 bu. in 1945 and 86,400,000 bu. in 1946, were much above the 1935-44 average of 60,000,000 bu. Peach production fluctuated widely from year to year since the crop is very subject to frost and insect damage. The 1943 crop, just preceding the three big crops, was only 42,000,000 bu., the smallest in 23 years. During the decade 1937-46 peaches amounted to about 17% of non-citrus U.S. fruit production. The use of peaches changed slowly. Of crops during the latter part of the decade, about onehalf was sold to be consumed fresh, one-fourth was canned. about one-tenth was dried and an increasing amount was frozen. In 1945, about 2,300,000 bu. were frozen. Peaches retain their quality to a high degree when frozen, and both commercial and home-freezing promised to take an increasingly larger part of the crop. Canned peaches continued to come from the large commercial or orchard centres, but the introduction of freezing was expected to stimulate a wider distribution of peach growing in areas where the crop had been abandoned for 20 years or more while the commercial areas were expanding rapidly. After 1934, California produced about 40% of the total U.S. crop, and canned peaches were mostly California cling-stones. Practically all drying was confined to California and to freestones. Freestones were canned in larger quantities and cling-stones were also dried. The 1946 crop of California clingstones, providing about 90% of canned peaches, returned the largest crop since 1930.

Prices of peaches were at an average of \$1.04 per bu. in 1937 with a crop of 59.724,000 bu., but dropped during the next four years to about 80 cents per bu. With the war demand, prices advanced to \$2.65 average in 1943, then declined for the record crop of 1944 to \$2.35. The big crops of 1945 and 1946 sold well, and the seasons' average prices were close to the level of 1944. The average price for fresh peaches in 1944 was \$2.75 per bu. and in 1945 \$2.56. For canning, growers received \$55 per ton in 1944 and \$57 in 1945. The ceiling prices for peaches were designed to give growers a national average of \$2.16 per bu. in 1944 and 1945. These ceilings were adjusted by regions

and by grade of peaches through the season.

Large quantities of dried peaches were taken by the U.S. government for military, lend-lease and relief uses. Of the 1944 crop, the first of the three record crops during the war, which amounted to 75,963,000 bu., 18,331,000 bu. were canned; 7,298,000 bu. dried; 1,476,000 bu. were processed in other ways and the rest was used fresh. Exports of both dried and canned were heavy. Peaches were dried in quantities in other countries, principally Argentina, South Africa, Chile and Australia. In 1944 the total was estimated at 81,000 tons, compared with 175,000 tons in the United States.

Table V.—U.S. Peach Production by Leading States, 1937–46

	1937	1939	1941	1942	1943	1944	1945	1946*
U.S. Total	59.7	61.0	74.9	66.3	41.9	75.9	81.5	86.4
California	23.2	24.2	23.2	28.7	24.9	34.0	30.8	37.3
Georgia	2.7	3.8	7.1	6.1	1.5	4.5	8.0	6.2
South Carolina	1.0	1.6	4.0	3.5	.3	2.4	5.7	5.6
Michigan	2.6	2.7	3.8	2.1	1.4	3.6	4.4	4.4
North Carolina	1.9	1.3	3.1	2.4	,2	2.6	2.1	3.1
Arkansas	2.2	2.6	3.0	2.3	.7	2.6	2.9	2.8
Washington	.9	1.2	2.0	2.1	2.0	2.6	2.8	2.7
Texas	1.3	1.9	2.4	1.6	.9	1.5	2.7	2.3
Virginia	1.5	1.0	1.8	1.9	.2	2.1	.5	2.3
New York	1.8	1.7	1.6	1.6	.09	1.8	1.6	1.9
Colorado	1.5	1.5	1.5	1.4	1.9	2.1	2.3	1.8
Alabama	.9	1.7	2.4	1.5	.6	1.3	2.4	1.6
Pennsylvania	2.6	2.4	1.8	1.7	1.1	1.8	1.2	1.5
Missouri	1.7	1.1	1.1	.5	.06	.3	1.0	1.2
Illinois	2.1	1.8	2.3	.6	.4	1.4	1.7	1.1
Mississippi	.4	1.0	1.3	.9	.4	1.1	1.4	1.0
Kentucky	1,3	.5	1.6	,i	.3	.8	1.2	
Utah	.07	.5	.7	.3	.8	.8	.8	.9 .7
Tennessee	1.8	1.4	2.2	.4	.3	٥.	1.8	Ï,
Oklahoma	1.0	.6	.7	.4	Ĭ.	.2	.7	۵.
Chio	1.2	1.2	1.1	.6	.3	1.0	.7	.5
Indiana	.4	.3	٥.	.ī	Ĭ.	.6	.5	.5
Oregon	.2	.3	.4	.5	.4	.6	.5	.5
West Virginia	.5	.3	.5	.5	i	.6	.3	.4
				,-				• • •

All other states less than 400,000 bushels.
*Preliminary estimate.

Pears.—Pear production reached a high record in the United States during the decade, almost 50% above the level of ten years earlier. California continued to be the centre of production, harvesting three-fourths of the nation's crop in 1945. Production in the Pacific states averaged about two-thirds of the total crop; three-fourths of this western crop was of one variety, Bartlett. The crop varied from 24,585,000 bu. in 1943 to 35,488,000 bu. in 1946. The pear crop fluctuated less than most other fruit crops because such a large part of the total was grown in California, where the weather hazard is less than in the east.

About half the crop was sold for use as fresh fruit, about one-third canned, and only 5% dried. Of the car-lot shipments of about 12,900 cars in 1944 and 1945, 93% originated in the three states of Washington, Oregon and California. Nearly all the pears used for canning were of the Bartlett variety, but about one-half of those sold fresh were Bartletts. Other leading varieties were D'Anjou and Bosc.

Prices of pears were at a level of about 75 cents per bu. in 1937 but began to rise in 1941 to a record of \$2.36 per bu. average in 1943. In 1944-45, prices declined slightly but recovered in 1946 to record levels.

The part of the pear crop canned increased from about 7,000,000 bu. in 1937 to 10,797,000 bu. in 1942 and then dropped off. At the same time, the quantity dried declined from an average of about 1,500,000 bu. to 900,000 bu. Exports for fresh consumption amounted to over 170,000,000 lb. in 1938 but dropped to 6,000,000 lb. in 1943. The amount of canned pears also declined during the decade, from 77,000,000 lb. in 1938 to 12,288,000 lb. in 1944. Imports ranged from 2,054,000 lb. to 15,427,000 lb. in the 1937-46 decade.

World production of pears before World War II centred in the United States and Germany, with total crops about

Table VI.—U.S. Pear Production by Leading States, 1937–46
(In thousand bushels)

equal. The average for
1931-35 in the United
States was 25,568,000 bu.;
in Germany 23,750,000 bu.;
the world crop averaged
122,253,000 bu. Other pear-
growing countries of im-
portance were France, 16,-
000,000 bu.; Italy, 9,503,000
bu.; Switzerland, 8,103,000
bu.; Japan, 7,127,000 bu.;
Czechoslovakia, 5,218,000
bu.; Austria, 4,368,000 bu.;
and Spain, 3,255,000 bu.
The world crop declined
sharply after 1944, when
the war extended to Cen-
tral Europe. Tree destruc-
tion was not general, how-
ever, and the crop was ex-
pected to recover as fer-
tilizers became available.
Discours The TIC or leave or

	1937	1939	1941	1942	1943	1944	1945	1946*
U.S. Total	29,548	31,047	29,530	30,717	24,585	31,956	34,011	35,488
California	9,334	10,542	9,292	9,751	12,543	10,417	14,209	12,917
Washington	5,600	5,779	6.954	6,671	5,266	8,665	7.700	9.090
Oregon	3,550	4,229	4,050	4,328	2,817	4,354	5,439	6.005
Michigan	1,380	1,354	1,284	1,000	418	1,193	178	1.032
New York	1,305	1,749	848	1,241	528	1,157	272	656
Texas	412	406	376	508	211	502	496	503
Georgia	244	281	400	507	138	500	502	454
Mississippi	1 <i>57</i>	348	462	519	136	354	401	343
North Carolina	281	230	405	440	88	354	360	390
Virginia	416	189	435	528	26	428	61	378
Alabama	211	313	397	400	112	312	416	343
Missouri	684	426	365	415	170	175	370	275
Illinois	999	668	515	471	232	335	354	270
Pennsylvania	81 <i>7</i>	918	350	491	174	464	120	318
Tennessee	284	244	563	415	132	188	467	226
Arkansas	214	211	201	202	80	228	231	218
Louisiana	70	130	171	239	78	245	228	235
Kentucky	411	206	320	292	80	135	248	182
Florida	127	69	156	189	99	176	1 <i>57</i>	174
Oklahoma	141	92	256	227	75	96	203	168
South Carolina	72	104	145	507	36	160	191	158
Ohio	992	956	392	422	1 <i>7</i> 3	373	238	141
Kansas	282	151	98	144	52	63	124	122
Utah	64	104	153	82	200	170	223	115
Indiana	630	527	224	201	72	1 <i>57</i>	146	134
Colorado	153	173	175	1 <i>77</i>	264	1 <i>57</i>	282	87
All other states less than 100,000 bushels.								

Plums.—The U.S. plum crop held to a very stable average from 1937 to 1943, varying only from 65,500 tons in 1938 to 79,400 tons in 1943. Then, in 1944, a record crop of 98,200 tons was harvested, nearly 30% above the previous year and over 40% above the ten-year 1933–42 average of 67,340 tons. This phenomenal crop was due to the great increase in California, where most of the fruit was grown. In 1946, production again made a high record of 105,000 tons, with the greatest gains in California, where the crop was 37% above the average.

*Preliminary estimate.

Prunes.—The prune crop declined through the decade 1937–46 from a total production of 714,500 tons in 1937 to about 650,000 tons average in 1944–46. The yield declined and harvesting was handicapped by labour shortage. On the dry basis the typical crop of 1944 was divided as follows: Washington, 300 tons; Oregon, 4,100 tons and California, 158,800 tons. Of the same crop, about 8,800 tons were frozen, 20,900 tons canned and the remainder sold for fresh consumption. Practically all California prunes were dried. Canning and freezing increased after 1943. Dried prunes comprised about 85% of the crop. The government required all prunes to be set aside for government purchase in 1944 as a large part of the supply was taken for military, lend-lease and relief uses. Civilian supplies were reduced sharply during the war years.

Prices of the prune crops declined from 1937 to 1938 and then began a steady advance which continued through 1946. The low point was an average of \$17.50 per ton for the crop of 1938 and a high of about \$90 for that of 1946.

	Tak	ole VII					7-46							
(In thousands of tons, fresh basis)*														
		1937	1939	1941	1942	1943	1944	1945	1946†					
		714	673	582	543	624	506	800	653					
		622	462	470	430	490	397	665	500					
		60	153	69	70	104	60	92	103					
		18	34	22	24	23	27	25	30					
		12	23	21	18	7	22	28	20					

*Two and one half lb. of fresh fruit equal one lb. dried prunes. †Preliminary estimate.

U.S. Total . . California

U.S. Production of Dried Prunes, 1937-46 (In Thousands of tons)

	1937	1939	1941	1942	1943	1944	1945	1946
U.S. Total	256.2	213.4	184.6					
California	249.0	185.0	1 <i>77.</i> 8	170.8	195.8	158.8	225.8	204.8
Oregon	6.5	26.6	6.4	5.9	11.3	4.1	7.7	8.7
Washington .	.7	1.8	.4	.1	.6	.3	.2	.4

Prices of dried prunes advanced even more rapidly, from \$54.60 per ton in 1938 to over \$220 per ton in 1946. Ex-

ports of dried prunes declined during the latter years of the decade from about 100,000 tons in 1940 to 45,000 tons in 1944. Large quantities were used by the military forces, however.

Pineapples.—Concentrated entirely in Florida, the U.S. production of pineapples fluctuated widely from a high of 25,000 boxes in 1936, and 15,000 boxes in 1937, down to 3,000 boxes in 1943. The crop of 1944 rose to 15,000 boxes; 10,000 boxes were produced in 1945 and about 20,-000 boxes in 1946. Prices advanced from an average of \$2.50 per box in 1937 to \$6.00 in 1943 and about \$5.50 in 1944-46. Most of the U.S. supply was shipped from Hawaii in the form of canned pineapple before World War II, while the Florida crop was mostly used fresh. The Hawaiian shipments of canned pineapple reached a high level of 595,000,000 lb. in 1937 but dropped off to around 143,000,000 lb. by 1945. Juice shipments also declined about 50% in the same years. The major supply of fresh pineapples came from Puerto Rico in the prewar period, over 500,000 boxes being received in 1937. These shipments were shut off completely in 1943-45, making the civilian supply very short in those years.

Strawberries.—The average commercial crop of strawberries in the United States was lower during the decade 1937-46 than in the previous ten years. A big crop of 13,-400,000 crates was harvested in 1942. A decline to 5,033,-000 crates in 1944 was followed by a recovery to about 7,300,000 crates in 1946. This was due to the downward trend of acreage from about 200,000 ac. in 1924 to a low of 87,000 ac. in 1945. Shortage of labour was the principal factor in causing the decline during the war years. Practically all of the commercial crop formerly had been used fresh, but new freezing processes increased rapidly from 1940 to 1946. The average of prices varied with the size of the crop from \$2.50 per crate to a record of \$8.50 per crate in 1945 as a result of the strong consumer demand. Storage holdings of frozen strawberries in June 1946 were 27% larger than the 1941-45 average, showing the increase in this method of preservation. Most of the crops of Oregon and Washington were frozen or canned. (See also Agri-CULTURE; CHEMURGY.) . (J. C. Ms.)

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Fruit Insects

See Entomology.

See FARM SECURITY ADMINISTRATION; FEDERAL SECUR-ITY AGENCY.

FTC

See FEDERAL TRADE COMMISSION.

See Coal; Gas, Natural, Petroleum.

Fuel Briquettes

Shortages of fuel during World War II caused the production of fuel briquettes in the United States to increase rapidly, since briquetting provided a satisfactory fuel from low-grade material, much of which could not have been utilized otherwise. Expansion was particularly marked in the Great Lakes region, where the plants utilized the coal fines from the lake shipping ports. More than half of the production capacity was in this area. The 1937 output of 995,930 short tons sagged to 871,260 tons in 1938, but rose sharply each year after 1939, to 2,762,204 tons in

Plant capacity did not change greatly (from 3,423,400 tons in 1937 to 3,782,900 tons in 1945), but the rate of operation increased from 34% of capacity to 73%. In 1945 there were 32 plants in active operation, while 7 more, with a capacity of 700,000 tons, were reported under construction or ready for operation in 1946.

In addition to the briquettes, there was an output of "package fuel," consisting of a number of cubical briquettes, weighing about ten pounds, wrapped and sealed in a package for convenience and cleanliness in handling. The 1937 output of 146,000 tons increased to 285,000 tons in 1940, but declined to 175,770 tons in 1944, largely because of shortage of labour and materials. In 1945, production recovered to 208,143 tons.

The briquetting of fuel was practiced in at least 25 countries, but mostly on a small scale. The prewar world production was of the order of 70,000,000 to 80,000,000 tons, but only 7 countries produced amounts over 1% of the total, and together accounted for about 95% of the total. Germany was far in the lead, with a normal output of 60,000,000 to 70,000,000 tons, with France second. After World War II the U.S. ranked third, followed by Belgium, Netherlands, Spain and the United Kingdom.

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(G. A. Ro.)

Fuel Oil

See Petroleum.

Fuller's Earth

After having reached a record high figure of 325,644 short tons in 1930, the production of fuller's earth in the United States suffered a steady decline to 226,165 tons in 1937, and a low of 146,568 tons in 1940, largely attributable to the substitution of other product (especially bentonite) in the refining of oils, which had formerly taken almost the entire output. After 1940, production was again on the increase, reaching 296,368 tons in 1945, more than double the 1940 low.

The Florida-Georgia area remained the largest producer, followed by Texas and Illinois, with small amounts from California, Nevada, Tennessee, and Utah. Increased pro-

Production and Use of Fuller's Earth in the United States (Short tons)

	193 <i>7</i>	1939	1941	1943	1945
Sales	226,165	167,070	207,446	247,258	296,368
Used in Refining oils and fats Absorbents	221,109	158,566	198,991	213,434 23,076	219,576 57,700
Drilling muds	5.056	8,504	3,769 4,686	5,233 5,515	11,608 7,484

duction over the 1937 level went into new uses; practically the same tonnage was consumed in refining oils as in 1937. In 1945, the refining of mineral oils took 65% of the total and vegetable oils 9%, a total of 74%, against 97% in 1937; the largest of the new uses, as an absorbent took 19%, and drilling mud for oil wells most of the remaining

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Functionalism

See Architecture.

Fundamental Particles

See PHYSICS.

Furniture Industry

During the decade 1937-46, the furniture industry in the United States made greater technological progress than it did during the preceding 100 years, when furniture-making became a business instead of a trade.

After every great war in history, artistry had flourished. The same artisan who carried a crossbow into Picardy later returned home with fresh inspiration. And U.S. designers who served on the many battlefields of World War II returned to their drawing boards freed of the shackles of commercialism that once bound them to tradition.

Had not the war upset the routine of the furniture industry and diverted its efforts from case goods to aeroplane parts and glider wings, most factories still would have followed the old cabinetmaker's ritual and turned out period reproductions by the same wasteful methods, utilizing more manpower than necessary, because that was the way good furniture had to be made, or so they thought.

But army and navy engineers thought differently and, in their great need for more aeroplane parts, they visited furniture factories engaged on government contracts and taught the superintendents how to simplify and mechanize production methods.

The greatest time-saving innovation they introduced was the use of the conveyor system in handling materials and work in process of manufacture. Although the automobile industry had used conveyors for years, most furniture factories clung to the old system of hand-trucking parts to each bench and machine, permitting each artisan to add his contribution to each piece of furniture at his own speed.

As most cabinetmakers were gray-haired veterans, the speed was often a snail's pace.

Most manufacturers of high quality furniture were skeptical of this speedier system, but were willing to employ it at government request to increase war production. To their surprise, they soon discovered that the younger men, and some of the older, were turning out equally as good work when it was brought to them by conveyor as when it was trucked to their benches, and faster. This method of production made it necessary to divide the operations so that each man did only one or two instead of the many

But this revolution in furniture-making would have been impossible except for new materials, also introduced by government engineers. A new glue made of resin and urea was not only faster-setting under heat but also stronger than the wood it joined together. Better animal glues also were evolved, and the use of hot plate presses for bonding plywoods and shaping them speeded up production and made a more durable product. Then methods of impregnating woods to make them as tough as steel were introduced. A method of impregnating some woods with dyes instead of staining them later was conceived so that the entire lumber in a piece of furniture might be the same colour down to the core. Fast-drying plastic finishes added the final touch necessary to prevent bottlenecks in the finishing department, and the furniture industry surprised everyone, especially itself, with the amount of war work it was able to turn out-close to \$400,-000,000 in two years while still producing \$1,000,000,000 worth of household furniture and furniture for the Red Cross, the U.S.O. and for officers' quarters and army recreation centres. Since this work had to pass rigid government inspection, manufacturers became convinced that the new methods would produce a better product than the old materials and methods. With a backlog of \$5,000,000,000 worth of orders awaiting only the release of sufficient supplies of lumber, the furniture industry faced the postwar future with confidence.

The years 1937-46 marked a steady increase in production and a steady gain in net profits so that by the latter year the furniture industry was more prosperous than at any other time in its long history. By 1937 the 3,300 furniture plants still in operation after the long depression had begun to recover rapidly and turned out \$500,000,000 worth of furniture, more than double the 1933 output. By 1941 furniture production had risen to \$660,000,000, an all-time record. These factories included 2,300 woodworking plants, 900 upholstery establishments and 100 metalworking plants. Then came the war, and gradually more than 50% of these factories accepted government orders, but most of them also produced some household furniture to keep their dealers supplied because all their equipment and manpower could not be utilized for war work.

Some made glider wings, others aeroplane panels, many made bunk beds for ships, boat hulls and seats, while others made truck bodies, ammunition cases and 100 other items of wood.

Thus in 1943 the industry's production of wooden household furniture dropped to \$565,000,000, but \$200,000,000 worth of war goods had been added that year. With the end of World War II in 1945, production of household furniture shot back up to \$610,000,000. The 1946 output was estimated at \$700,000,000.

In the year after V-J day, some 300 new furniture factories were organized, principally in Michigan, North Carolina, Georgia, Virginia, California, New York and Washington. In addition, about 50 former aeroplane factories, metalworking plants, lumber and plywood mills and boatbuilders began to supply bedroom and dining room furniture, desks and tables, upholstered furniture, aluminum porch and garden furniture, kitchen furniture and other household items to the trade.

Comparing costs of production in 1946 under the new methods with those employed by most factories in 1937, the manufacturers' sales dollar was divided as shown in the accompanying table.

The reduction in direct labour cost was the most remark-

	D	liv	ısi	on	of	М	an	υf	acf	ur	ers	' S	ale	:5	Do	llar	1946, 1937	
																	1946	1937
Materials																	42.38	41.26
Direct labour .		٠		٠													19.22	22.84
Factory overhea	d	٠	٠														15.94	17.43
Sales expense.			٠														6.81	8.25
Administration.																	5.60	6.33
Taxes & Misc .																	5.97	1.11
Net profit																	4.08	2.78
•																	100.00	100.00

able in the industry's history because, according to U.S. department of labour statistics, the furniture industry's average hourly wage rate in 1946 was 85.3 cents, an increase of 34.6 cents per hour from the 1937 hourly rate of 50.7 cents. It was the highest average wage ever paid by the furniture industry, which by 1946 had become about 50% unionized.

It would be misleading, however, to attribute the entire increase in production and the lower labour cost (despite higher wages) entirely to mechanized production. Furniture prices rose approximately 30% in the ten years after 1937, and in addition more high-priced and less low-priced furniture was made after the war. The industry actually was producing fewer units in 1946 than in 1937 despite the fact that its dollar output showed a gain of 40% during this period.

The World Industry.—Throughout the world, the war played havoc with the furniture industry, destroying factories in Europe that had been operating for more than a century, and destroying more homes and their furnishings than any previous war.

In Germany, the 1,000 furniture factories that served central Europe were practically wiped out. France's 1,200 small furniture factories almost passed out of existence during the long occupation, as all production facilities were concentrated by the German war lords on planes, guns and tanks. Slowly these small shops, employing from 10 to 50 employees, returned to life after the war, and France became the first nation on the continent to offer new modern designs by prewar designers.

England's 2,000 factories, employing an average of 50 men each, were still turning out "utility furniture" in 1946, but were hopeful that supplies of hardwoods, most of which had to be imported from America and Africa, would soon increase so that the rigid regulations could be lifted and the rationing of furniture and regulation of designs and materials could be ended. The British factories had a large backlog of business to refurnish homes bombed out during the war, and manufacturers were eager also to recover their lush Latin American trade. U.S. factories never had exported much furniture except to Canada and Mexico and, with the U.S. public buying every piece that could be turned out, U.S. furniture makers were not as concerned about foreign trade in 1946 as were the British.

The Canadian furniture industry, comprising 600 large and small factories, enjoyed great prosperity throughout the war and at its close was producing more furniture than ever before, because of a plentiful supply of hardwoods. In Mexico the industry grew rapidly and promised to become a prime competitor with the European industry in Latin American trade. The number of Mexican factories was estimated to exceed that of Canada.

Except in the U.S., the attention of furniture manufacturers was turned toward the U.S.S.R. at the close of the war. With unlimited supplies of hardwoods and manpower, the furniture industry was expected to grow rapidly there, although the U.S.S.R. suffered heavily from

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the war and might need all the furniture it could produce at home and in the countries it controlled.

Throughout the world, there was a great shortage of furniture in 1946 which, it was estimated, would require five to ten years to fill completely. But factories were springing up in every country to meet this unprecedented need, and furniture makers everywhere were wondering how long it would be before world-wide competition in furniture supplanted the conditions that existed before the war. (See also Interior Decoration.)

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(J. A. G.)

Furs

The United States fur industry became, in the period 1937 to 1946, financially strong and more influential as a factor in the world's fur trade. Like many U.S. industries it passed through great difficulties during the decade, yet its setbacks were nearly always followed by a forward movement in development and expansion.

The industry advanced particularly in the technical aspect of its business and led the world in the processing, dressing and dyeing of skins, one feature being the bleaching of dark fur skins to take light colours.

Great progress was made in the production of fur-bearing animals on farms. In 1940 a mutation fox, known as the platina fox, which originated in Norway, was introduced into the U.S. market. This type had been sold in Norway and Paris in 1938–39. A collection of several hundred skins from Norway brought record prices; one pelt sold in the raw state at auction in New York for \$11,000, a price never equalled before for a single raw fur skin.

U.S. and Canadian fox breeders began to produce large quantities of beautiful platinum-type foxes. Another mutation, the white-marked silver fox, was also introduced.

In 1939, U.S. silver fox breeders passed through a crisis. The closing of markets in Europe because of war preparations resulted in Norway's and Canada's dumping silver fox skins on the U.S. market. Values declined rapidly, and in 1940 it was necessary for the U.S. government to impose import restrictions which limited the number of silver fox pelts from foreign markets to 100,000 skins a year. This regulation still prevailed in 1946. Production of standard silver foxes in North America and Europe declined during the war years.

Mink farming grew rapidly in the years immediately preceding the war, and for a time ranch mink outranked wild mink. The attack by Japan brought a temporary slump in all fur values, especially ranch mink. The market quickly recovered, however, and during the war years both ranch and wild mink gained tremendously in value. Ranch mink production in the U.S. and Canada reached more than 600,000 skins annually by 1945, and prices mounted to new highs, with \$60 and \$70 not uncommon for ranch and wild skins in the raw state.

In 1944 the first successful mutation mink, a platinumtype, was introduced to the trade. When sold, under the trade-marked name "Silverblu," at auction in New York this mutation brought a top price of \$260 per skin, the highest price ever recorded for any kind of mink. Other mutation minks of different colours were introduced later, but only limited quantities of these skins were available even in 1946. During the war years the U.S. government ceased to publish figures revealing imports and exports of turs and skins. In spite of marine warfare, however, importation of furs continued in limited quantities.

The approach of chaotic world conditions was signalled by the behaviour of the world's fur markets during the years immediately preceding hostilities. World demand for furs commenced to decline in 1936 and continued through 1938; a low point was reached in the skin season of 1939—40. Temporary panic seized the U.S. and Canadian markets following the raid on Pearl Harbor. This condition existed for several months, but as war production got under way the markets revived. Fur apparel by late 1942 was selling so freely that supply could hardly keep up with demand; this condition continued throughout the immediate postwar period.

During the years 1939-45 there was a great change in the marketing of Persian lambskins from Afghanistan, the U.S.S.R. and South-West Africa. Before the outbreak of war in Europe, these lambskins were shipped to London and sold at public auction. The war prevented this trade. Skins were shipped to New York and in 1940 were sold for the first time in America at public auction in the raw state. New York from 1940 to 1946 was the Persian lamb market for the world, and the article became one of the most favoured furs with the American public.

The U.S. and Canadian markets consumed the bulk of the world's Persian lambskin production during the war years. Of all furs entering the U.S. trade during that period, Persian lamb was the most valuable as well as one of the most plentiful. Gray Persian lamb became very fashionable in 1944-45 and often surpassed in value corresponding quality in natural black Persian.

After the lifting of OPA price restrictions, Russian Persian sold at auction as high as \$25 per skin in the raw, Afghanistan Persian up to \$23, and South-West African as high as \$21.

Muskrat was one of three ranking furs in demand during the decade 1937-46, and because of its abundance and modest price retained its popularity year after year. In addition to domestic pelts, the U.S. consumed large quantities of Canadian, Alaskan and Russian skins.

In 1938 U.S. fur dyers commenced to dye muskrat skins mink and sable shades. The article caught on slowly, and mink- and sable-dyed muskrat coats sold for as little as \$117 retail. By 1941 the article had been greatly improved in appearance, and fur manufacturers made coats from let-out muskrat skins which closely resembled mink. The workmanship increased the cost of the garment, and prices rose steadily until in 1946 New York shops were selling mink- or sable-dyed or blended let-out muskrat coats for \$800 to \$900 plus tax.

In 1945 it was possible to obtain large quantities of South American, African and domestic lambskins, which when processed, dressed and dyed, make the so-called mouton fur. During the war these shearlings were used to manufacture flying suits for the U.S. air corps.

Mouton originated in Hungary about 1926 and was known by the trade name "Pannomia." From the continent it found its way to England, where it enjoyed great vogue. Its manufacture in the U.S. was started in a limited way by one firm which obtained Hungarian patent rights to the article. In 1941 a patent was granted to another firm by the U.S. government for what was described as a new method of processing lambskins into mouton. This patent enabled many new firms to undertake the production of mouton.

In the 1945-46 season mouton garments were in abun-

dant supply and available in various colours. It was inexpensive and filled a popular demand for a warm, hard-wearing garment. It was one of two furs remaining under OPA price control in 1946 and sold at retail for as little as \$100.

In 1938 the U.S. entered into a "most-favoured-nation" agreement which reduced the import duty of silver fox from 50% to 371/2% ad valorem; the duty on dressed furs, with a few exceptions, from 25% to 15%; and the duty on dyed furs from 30% to 20%.

The fur trade came under control of the Office of Price Administration in 1942. The price of furs, by their nature, was difficult to control. OPA insisted it could be done; numerous regulations were issued and committees appointed. A great black market developed. Control was impossible among trappers and country collectors. OPA established prices in skins and fur apparel many times, but prices increased in spite of prosecutions and fines. In 1946 mouton and rabbit furs remained under control.

On Oct. 1, 1941, the U.S. government placed a tax of 10% of the retail price on all articles of fur, or articles trimmed with fur where fur was the part of the garment of chiel value. The tax was increased to 20% on April 1, 1944. These taxes produced considerable consumer resistance at first but it did not last long. The revenue obtained by the government from these emergency taxes was as follows, according to the U.S. bureau of internal revenue: 1942, \$36,657,295; 1943, \$54,925,218; 1944, \$68,814,902; 1945, \$88,775,140; 1946, \$40,301,281 (first 6 months).

Great Britain.—During the war years 1940–45, the London fur market ceased to operate. Throughout that period the Hudson's Bay Co., held its auction sales very successfully in New York. Eastwood and Holt, another famous London fur auction company, opened a New York branch in 1940 and marketed great quantities of South-West African Persian lambs. A number of London firms moved to New York and continued in the fur business for the duration.

One of the London areas bombed by the Germans was the fur district; whole blocks were devastated. Members of the fur trade in London entered the various services, and a few of the older members "stuck it out," even though they were compelled to move their offices outside the city to operate.

In 1945 and 1946 British merchants were allowed to import furs, provided they re-exported most of them in one form or another in order to provide foreign revenue for Great Britain. The British fur trade in 1946 was producing limited quantities of cheap fur apparel for home consumption.

The Hudson's Bay Co. returned its fur auction business to London in early 1946 with large offerings of skins. The demand from England and the continent was limited, although prices obtained for skins were high. London, however, had taken the first step in the restoration of its world-famous raw fur market.

China.—China exported millions of dollars worth of weasels, kolinsky, lambskins and kidskins to U.S. and European fur markets prior to the Japanese invasion of Manchuria and China. Shipments declined rapidly as Japanese occupation became widespread and had practically ceased by 1941.

It is noteworthy that furs and skins were about the first Chinese export after Japan surrendered; U.S. firms started receiving shipments from China early in 1946. The trade welcomed these renewed shipments of various Chinese furs.

The revival of the fur business in Japan was equally prompt. During the winter of 1945–46 Japanese traders



Luxury furs shown in 1946 included the royal kohinur and the royal pastel, both mutation minks. The latter was introduced in Seattle, Wash., and first placed on the market in 1946

assembled limited quantities of furs such as mink, marten, weasel, etc., and they found their way to the U.S. It was reported that they came via China and were not openly offered in the U.S. market as Japanese furs, but as Chinese and Asiatic furs.

Soviet Union.—From 1936 to 1939 fur business in the U.S.S.R. was active, and great quantities of raw and dressed skins were sold to the world by contract and through public auction sales in Leningrad. The soviet government transacted a fur business totalling an estimated \$60,000,000 to \$100,000,000 a year. The U.S. and Great Britain were the largest consumers of Russian furs. The soviet government endeavoured to build up its fur dressing and manufacturing business.

Some Russian furs reached the U.S. throughout the war. No statistics were published, but in 1945 large quantities of Russian furs commenced to reach the U.S., and in 1946 shipments were also sent to London.

Canada.—The U.S. continued to be the largest user of Canadian furs and purchased the greater part of the annual Canadian crop, which varied from around \$15,000,000 a year up to approximately \$30,000,000 in 1945. In the war years Canada sold nearly all her furs in the U.S., and filled most of the import quota on silver fox. Canada imported U.S. furs to a limited extent, also certain foreign furs such as Persian lamb. Prior to the war, London was the principal marketing centre for Canadian furs, and in 1946 auction sales of these furs were resumed. During the decade, steady progress was made in the development of fur farming in Canada, which received new impetus with the war's end.

India.—The popularity in the U.S. for Persian lamb in turn created a demand for Indian lamb. This fur had received only limited interest prior to 1940. Its curly pattern made it a substitute for the more expensive Persian lamb. U.S. fur dressers and dyers improved their technique greatly in processing this fur during the period 1940–45. India also supplied the U.S. with quantities of kidskins, stone marten and marten from the Himalayas.

Australia and New Zealand.—Prior to the Pacific war, Australia and New Zealand were large suppliers of rabbit and opossum skins to the U.S. and European markets. The war curtailed the shipments of these and other skins.

In 1945 the rabbit skin market was unfavourably affected in the United States by the growing popularity of mouton. During World War II, Australia used a considerable part of her rabbit catch for the manufacture of felt hats for troops and civilians.

France—France and the U.S. carried on an active fur business before 1939, and Paris designers and manufacturers of fur fashions were influential in the fur fashion world. France imported some North and South American furs and exported rabbit, baum and stone marten to the U.S. Because of government regulations, France was able to import only limited quantities of furs in 1946.

South America.—During the years 1936 to 1941, the U.S. enjoyed a steady fur business with many South American countries. Exports from these countries were curtailed during the war. Prices of South American furs advanced and reached a peak in the U.S. in the winter 1945–46, attributable in part to increased demand for these furs in their native countries.

Scandinavia.—Trade with the Scandinavian countries increased during prewar years, especially in farm-bred furs. When Norway was invaded, silver fox pelts produced annually totaled around 1,000,000 skins. Production in Sweden reached a high point of about 400,000 silver foxes in 1939. Throughout the war Sweden exported furs to North and South America whenever possible. Norwegian furs re-entered the fur trade in 1946 when an offering of blue foxes was sold in New York. Fur farmers of Norway imported North American mink and silver foxes for breeding purposes. Denmark's fur farming increased greatly during the German occupation.

Alaska.—The Alaskan fur trade was maintained during the décade at around \$2,000,000 worth of skins a year. Some years the catch showed a decline, but the tendency was for it to increase. During the war it fell off. The Alaska seal-skin catch was interrupted during 1943 by war activities in the Alaskan and Bering sea area. The seal herd was reported to have passed 2,000,000 in 1944. (W. J. Bt.)

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FWA

See Federal Works Agency.

Galen, Clement August von

), archbishop of Muen-Cardinal von Galen (1878ster, was born at Dinklage, Westphalia, Germany, on March 16, 1878. He was ordained to the priesthood in 1904, and was named bishop of Muenster in 1933. One of the most outspoken and fearless of the German opponents of nazi doctrine and practices, he protested whenever Adolf Hitler violated the concordat signed with the Vatican, and condemned the unauthorized "murders" of invalids and the mentally ill. He vehemently denied the charge that all the German people were equally responsible for the atrocities committed during the war. His episcopal palace destroyed by the nazis, he retired to a Catholic hospital at Sendenhorst, where he resided until the end of hostilities. Pope Pius XII proclaimed him a cardinal on Feb 18, 1946.

Gambia

See British West Africa.

Gamelin, Maurice Gustave

Gamelin (1872-), French soldier, was the son of a general, born in Paris and educated at St. Cyr. He was chief of staff of Gen. Joseph Joffre in 1914, and in 1917 became commander of a division. In 1925 he was appointed commander of French forces in the Levant. He became chief of the general staff in 1931, inspector general in 1935 and supreme commander of all armed forces on June 6, 1939. His tactics after the start of World War II in Sept. 1939 were based largely upon the defense provided by the Maginot line, and consequently Germany's mechanized war of movement in May and June 1940 found France woefully unequipped to stem the invasion. On May 19, 1940, he was replaced as commander in chief by Gen. Maxime Weygand. Following the fall of France, Gamelin was formally arrested in Nov. 1940 and imprisoned in a detention centre near Riom. Together with Blum and Daladier, he was removed to a German fortress two years later, where he was interned until freed by U.S. troops on May 6, 1945.

Gandhi, Mohandas Karamchand

Gandhi (1869—), Hindu nationalist leader, was born at Porbandar (Kathiawar), India. Educated in the law at London, he began practice in Bombay, but in 1893 went to South Africa. There he became leader of the struggle for civil rights of the Indian settlement. It was in this period that he conceived the tactics of "passive resistance." In 1914 he returned to India, where within seven years he had attained undisputed leadership of the anti-British movement and the stature of a saint (Mahatma, or Great Soul) among the Indian masses. He was delegated full authority by the Indian National congress and was on several occasions imprisoned by the British.

On Jan. 22, 1937, Gandhi announced his retirement from active Indian politics, but by 1940 he was as prominent as ever in Indian affairs of state. The All-India congress on March 20, 1940, delegated to him the direction of negotiations with Great Britain for national independence, and on Sept. 17, 1940, the congress committee elected him its leader. In April 1941 he announced that the congress had temporarily abandoned its aim of independence for India, but he reaffirmed his personal policy of nonviolent civil disobedience. On Dec. 30, 1941, Gandhi



Mohandas Gandhi, acting as adviser at the conference which opened in Simla, India, June 25, 1945, is shown being photographed under protest. British proposals for increased self-government for India ended in failure at this conference

resigned from its leadership and the congress terminated its campaign of civil disobedience. Gandhi's policies during World War II were ambivalent: he did not wish to hinder the British war effort, but neither did he wish to abandon the struggle for independence.

On March 27, 1942, Gandhi conferred with Sir Stafford Cripps, head of a British mission to India, but he rejected the latter's plan for Indian postwar independence, fearing that it might result in the partition of India. On Aug. 9, after the All-India congress party had approved his proposals for a renewed civil disobedience campaign, Gandhi was arrested with 200 other Indian leaders and was held as a political prisoner in the Aga Khan's palace in Poona. During Feb. 1943, he staged one of his longest and most famous hunger strikes, which was accompanied by demonstrations and strikes throughout the country until he was released in May 1944. When the British government announced its plans for an independent India on May 16, 1946, Gandhi and the congress party endorsed the British proposals, participated in the conferences and urged that a united and independent India be peacefully established. (See also India.)

G.A.R. (Grand Army of the Republic)

See Societies and Associations.

Garbage and Waste Disposal

See Public Health ENGINEERING.

Garbett, Cyril Forster

The Archbishop of York (1875-), was born on Feb. 6, 1875, and was educated at Portsmouth Grammar school, Keble college and Cuddesdon, Oxford. He was ordained in 1899 and after various minor appointments became, in 1909, vicar of Portsea,

one of the most important parishes in Great Britain. There he made his reputation as an able organizer, administrator and trainer of junior clergy, displaying in his methods an inflexible discipline. His other dominant interests were housing, education and underprivileged labour. His appointment as bishop of Southwark in 1919 permitted him to acquire a first-hand knowledge of slum conditions. On his appointment in 1932 to the historic diocese of Winchester, Garbett began his famous hiking expeditions, visiting the people in their own villages and homes and earning the reputation of being a great pastoral bishop and diocesan model. He continued these expeditions when he was appointed archbishop of York in 1942. As the representative of the Church of England, he visited Moscow in Sept. 1943 and the U.S. in April-May 1944. His later publications included A Call to Christians (1935); The Church and Social Problems (1939); What Is Man? (1940); We Would See Jesus (1941).

Garlic

See VEGETABLES.

Garnet

See ABRASIVES.

Gas, Natural

The salient features of the production and consumption of natural gas in the United States during 1937-45 are indicated in the table below.

Aside from a 60% increase in consumption after 1937, it is pertinent to call attention to the variations in the types of use. For example, the production of carbon black in 1945 used only a quarter more gas than in 1937, though the output had more than doubled in the meantime. Domestic consumption was on a par with the average consumption increase, but commercial and industrial consumption more than doubled.

It is significant also to note the disposition of the 20-30% surplus of gas produced over and above the amounts sold. In 1919, one-fifth of the gross output was lost or wasted; in 1943, this proportion had been reduced to oneseventh, a significant improvement, but one open to further advance. The most striking feature was the growth of the practice of returning surplus gas to the ground, either to repressure oil fields or for storage for future use. In the period 1937-45, the amount of gas saved in this way increased about tenfold. The procedure was not only an important conservation measure, in that it reduced the loss and waste, but also improved yield of the oil fields.

(G. A. Ro.)

Naturai	Gas ın	the	United	Stafes
	(Billions	of	cu. ft.)	

193 <i>7</i>	1938	1939	1940	1941	1942	1943	1944	1945
Production	3,061.2 649.1 116.5 2,295.6	3,333.5 677.3 179.4 2,476.8	3,694.1 656.0 377.9 2,660.2	4,103 5 630.2 660.6 2,812.7	4.453.9 626.8 771.6 3,053.5	4,942.6 684.1 843.8 3,414.7	2 2 3,711.0	3 3 3.845
Exports 4.9	1.8	3.1	5.6	7.5	8.7	11.2	14.6	20
Consumption † 2,403.0 Domestic 371.8 Commercial 117.4 Field 651.3	2,294.1 367.8 114.3 659.2	2,473.8 391.2 118.3 680.9	2.654.7 443.6 134.6 711.9	2,805.2 442.1 144.8 686.2	3,044.8 498.5 183.6 721.1	3,403.5 529.4 204.8 781.0	3,696.5 562.2 220.7 855.2	3,825 610 240
Carbon black	325.0 109.7 548.1 170.0	347.3 97.7 647.3 191.1	368.8 128.0 847.7 183.2	365.4 147.1 1,018.6 205.2	335.5 201.7 1,104.4 238.7	315.6 243.6 1,329.1 305.6	355.8 301.0 1,401.5 359.7	431.8
Treateds 2 108 8	2.035.6	2.150.0	2.471.4	2.763.3	2.864.4	3.028.0	3.300	

**Gas returned to the ground is mostly for repressuring oil fields; small amounts of surplus gas are returned for storage. †Consumption is Marketed Production less Exports, plus a small amount of imports.

**Errom 1940 the consumption by public utilities includes manufactured gas, and is not included in the consumption total.

**Streated for the recovery of natural gasoline.

Preliminary estimates.

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Gas Masks

See CHEMICAL WARFARE.

Gasoline

See CHEMISTRY: PETROLEUM.

Gasperi, Alcide de

De Gasperi (1881-), Italian statesman, was born April 3, 1881, in the Trentino, Austrian Tyrol. He was graduated from the University of Vienna in 1905 with a degree in philology. Later he became editor of irredentist journals and in 1911 he was elected by the pro-Italian populace of Trento to the Austrian parliament where he conducted a campaign for Italian minority rights. In 1915 after protesting against Austria's declaration of war against Italy, he was imprisoned for two years.

After cession of the Trentino to Italy by the Versailles treaty, De Gasperi joined the Italian Catholic party and was elected to the Italian parliament in 1921. Upon Benito Mussolini's accession to power, De Gasperi, who opposed fascism, returned to the Tyrol. He was arrested in 1926 and was sentenced to four years in prison for anti-fascist activities. Subsequently, he was given a position in the Vatican library, from which he organized underground opposition to Mussolini. Following the liberation of Rome in June 1944, De Gasperi became minister without portfolio in the first Ivanoe Bonomi cabinet. He was foreign minister in the second Bonomi cabinet and in the succeeding Ferruccio Parri regime and became prime minister in Dec. 1945.

De Gasperi's opposition to the monarchy was more tepid than that of his party, the Christian Democrats, which voted on April 27, 1946, to establish a republic by a three to one majority. In the national elections of June 3, 1946, the Italian people gave a majority of 2,000,000 votes in favour of a republic and the Christian Democrats became the strongest single party in the newly-elected national assembly.

After the official results were posted, the court of cassation made De Gasperi interim head of state until a president could be chosen. On July 2, 1946, he formed a new government, retaining the premiership and the portfolio of foreign minister.

Gas Turbines

See JET PROPULSION.

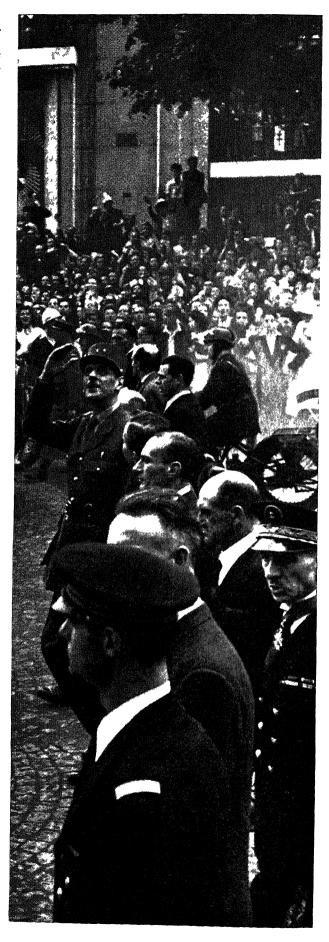
Gas Warfare

See CHEMICAL WARFARE.

Gaulle, Charles de

De Gaulle (1890—), French soldier and statesman, was graduated from St. Cyr military college at Paris shortly before the German invasion of France in 1914. Wounded three times during World War I, he was captured by German troops at Verdun in 1916, but escaped and saw further action on the western front and in the near east.

Gen. Charles de Gaulle leading a triumphant throng of French patriots down the Champs-Elysees after the Allied liberation of Paris in Aug. 1944



Gdynia
See Danzig.

During the interbellum period, De Gaulle tried to persuade France to mechanize its armies, but the conservative French general staff preferred to place its trust in static defense. When German mechanized armies skirted the Maginot line and overran France in May-June 1940, the validity of De Gaulle's theories was demonstrated, and he was belatedly named undersecretary of war in Reynaud's cabinet.

With the surrender of the Pétain government to the Germans in June, De Gaulle fled to London, formed the French exile regime, and rallied many French colonies to the Allied cause.

In Sept. 1941 the Free French National council was formed with De Gaulle as its president. He aligned his policy with that of the U.S., Great Britain and the U.S.S.R. and declared his council at war with Japan on Dec. 8, 1941. During the course of the next year the underground factions in France united, accepting the leadership of De Gaulle. After Adm. Jean Darlan's assassination in Dec. 1942, De Gaulle shared power in North Africa with his rival, Gen. Henri Giraud, and on June 3, 1943, the two leaders became co-presidents of the newly formed French Committee of National Liberation. But in November, Giraud resigned, leaving De Gaulle in full control of both the North African government and the French resistance movement. In April 1944 he was made supreme commander of the French armed forces. He returned to Paris after its liberation in Aug. 1944 and was acclaimed by the populace.

On Oct. 23 U.S., Britain, the U.S.S.R. and Canada recognized his regime as both the *de facto* and *de jure* authority for France.

With the defeat of the reich in 1945, De Gaulle attempted to reinstate France as a great power, asserting French imperial claims and the right to participate in international conferences. The French national elections of Oct. 21 were generally interpreted as a victory for De Gaulle's policies, although the communists and socialists emerged as the two strongest parties. On Nov. 6 De Gaulle's leadership was formally recognized when he was elected interim president of the provisional government by the new constitutional assembly. The growing strength of the Left in the assembly, and a united front of socialists and communists favouring the socialization of industry and the strengthening of the legislature at the expense of the executive, resulted in the resignation of De Gaulle on Jan. 21, 1946, and the announcement of his retirement.

Gayda, Virginio

Gayda (1885–1944), Italian politician and journalist, was born Aug. 12, 1885, in Rome. He studied law and political economy at the University of Turin, Italy, and later travelled extensively as a newspaper reporter. He served for a time in the Italian diplomatic corps. In 1921 he became editor of Il Messaggero of Rome, and after Mussolini came to power was given the post of editor of Giornale d'Italia. Under his supervision, the latter newspaper became the mouthpiece of fascism and faithfully reflected Italian foreign office views. Gayda's attitude toward his profession was extremely cynical; he was reported as having once said that a newspaperman's duty was not to tell the truth or the facts, but to write only for the good of the regime.

After the fall of Mussolini in July 1943 Gayda lived in retirement in Rome. The nazi-controlled Rome radio said that he was killed March 14, 1944, during an Allied air raid

Geiger, Roy Stanley

), U.S. marine corps officer, was born Geiger (1885-Jan. 25, 1885, in Middleburg, Fla. After graduating from Stetson university, Deland, Fla., in 1907, he enlisted in the marine corps and was commissioned a 2nd lieutenant in 1909. During World War I he served with the 1st marine aviation group in France. A graduate of the Command and General Staff school, the Army War college and the Naval War college, he directed marine aviation from 1931-35. In World War II, Geiger commanded all army, marine and navy aviation units at Guadalcanal in 1942, commanded army and marine forces on Bougainville the following year, led the expeditionary force that reconquered Guam island in July 1944, and headed marine forces in the Okinawa landings of April 1945. He was promoted to the rank of lieutenant general on June 19, 1945, and three days later was put in command of the Pacific fleet marine force.

Gems and Precious Stones

Except for diamonds (q.v.), the effect of World War II was disastrous in most of the leading gem producing areas. Aside from diamonds, sapphire was the only precious stone having industrial applications that led to increased demand. While the use of sapphire pivot bearings or "jewels," in watches and scientific and technical instruments was greatly expanded by war uses, much of the demand was satisfied by synthetic sapphire, rather than by the natural stone. In the U.S., sapphire production dropped from 20,000 oz. in 1943 to 4,500 oz. in 1944 and was discontinued in 1945. Information was lacking on operations in Australia and India after the beginning of the war.

The gem producing areas of Burma, Siam and Indo-China were presumably operated only to a minor degree if at all while in Japanese hands. Little or nothing was done in Ceylon and Madagascar, as the graphite mines had priority on the labour supply. The Colombian emerald mines were dormant even before the war; the 1945 U.S. imports included 1,085 carats of rough and 106,684 carats of cut emeralds, but nothing was known about their source except that some were Russian; also there was no indication as to whether the product was new production or old, but the valuation was extremely low, indicating poor quality. Early in 1946 it was reported that the remaining emerald stocks held by the Colombian government were sold to a U.S. jewellery firm, and there was a possibility that the mines would be reopened.

Under the wartime conditions, supplies of gem stones other than diamonds were greatly restricted, and markets reacted accordingly. (See also MINERALOGY.) (G. A. Ro.)

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General Education Board

See Societies and Associations: Rockefeller Foundation.

General Federation of Women's Clubs

See Societies and Associations.

448 Genetics

In order to form an estimate of the organisms on which the bulk of the genetic research was done in the decade 1937-46, 869 papers from 3 of the leading genetic publications were tabulated. Of the 522 papers on animal genetics, 2 dealt with the Mollusca, 7 with the Protozoa and the rest were about evenly divided between the Vertebrates and the Arthropods; 202 publications were on the fruit-fly genus, Drosophila, and 204 were distributed to the Vertebrates, man, mouse, domestic fowl, guinea pig, cow and pigeon. The remaining papers were distributed among 58 genera of Vertebrates and Arthropods. The 347 papers on plant genetics were distributed among 105 genera. Indian corn easily led the list with 45 publications; then in the order named came cotton, wheat, Tradescantia, tobacco, evening primrose, tomato, barley, cabbage and clover. These plants accounted for over half the papers published.

While cytology and genetics grew together in earlier years into the important science of cytogenetics, in the late thirties and early forties genetics formed broad and vital connections with biochemistry and with ecology and taxonomy. The union with biochemistry led to important new knowledge of the nature and action of the physical basis of heredity, the chromatin and its ultimate units, the genes. The union with ecology and taxonomy shed new light on the mechanics of evolution, at least at the level of speciation. Radiation genetics, initiated by the remarkable discovery by H. J. Muller in 1927 of the transmutation of the gene by X-rays, grew rapidly during the decade. With the possibilities of the extensive use of atomic energy and the consequent release in high concentrations of radioactive materials, this phase of genetics suddenly assumed a place of first rank in the practical affairs of man. Finally, the new advances in chemotherapy, the sulfa drugs, penicillin and other antibiotics, saw a sudden upsurge in the relative importance of chronic hereditary disease in man, and stimulus toward new advances in human genetics.

Human Genetics.—The discovery of the Rh factor and its implications was the outstanding achievement of the decade in human genetics. Karl Landsteiner and Alexander Weiner discovered that when blood from a Rhesus monkey was injected into a rabbit, an antibody was produced in the rabbit blood which reacted violently with an antigen present in the red blood cells of any Rhesus monkey receiving a transfusion of the activated rabbit serum. These investigators tested the bloods of a large sample of the human race for the presence of the Rh or Rhesus factor. They found that about 85% of the human bloods tested carried the Rh factor; that is, they reacted positively with the activated rabbit serum; and about 15% did not carry the Rh factor and reacted negatively. Individuals with such blood were termed Rh-negative. By 1941, through tests of the bloods of members of 60 families, Landsteiner and Weiner established the fact that Rh was inherited as a simple dominant factor, Rh-negative being the alternative recessive. Subsequent studies by Weiner and E. B. Sohn on 40 additional families corroborated this finding. By the application of a simple statistical technique it was possible to establish that the Rhpositive gene frequency in the white population of the U.S. was about 60%, the Rh-negative gene frequency about

The subsequent discovery of certain secondary effects of Rh demonstrated its great practical importance and intro-

duced theoretical considerations of much interest. For a long time the medical profession had known a disease of the new-born infant termed erythroblastosis foetalis. About one infant in 400 births was affected. The new-born infant was jaundiced, anaemic and oedomatous and frequently died soon after birth. After the discovery of the Rh factor, Philip Levine and his co-workers in 1941 established its connection with erythroblastosis foetalis and showed that the following conditions led to the disease. If an rh-rh woman, Rh-negative, mated with an Rh-Rh or Rh-rh man. Rh-positive, then she might carry a foetus with genetic constitution Rh-rh. In some cases red blood cells of the foetus, carrying the Rh antigen, might pass through the placental circulation into the blood stream of the prospective mother. In her blood Rh antibodies were slowly produced in response to the Rh antigen. Generally the first pregnancy was terminated without mishap. But on a second or third pregnancy involving an Rh-positive foetus, the antibody reaction became so strong that a sufficient concentration of antibody passed through the placenta into the blood of the foetus to cause a violent reaction, including the destruction of many foetal red cells. At birth the child lacked a normal complement of red cells and developed in consequence the symptoms mentioned above. Successful treatment of such cases was then worked out, based on a knowledge of the inheritance of the Rh factor.

While on the basis of gene frequencies it was established that about one in 40 pregnancies involved an Rh-positive foetus in an Rh-negative mother, only about one child in 400 was born an erythroblastotic owing to variations in placental permeability and to the slow accumulation of a dangerous amount of antibody. Racial differences in gene frequencies were found. Negroes showed a higher proportion of Rh-positive genes, and in Chinese and Japanese the ratio of Rh-positive was much higher. As more cross-tests of human blood were made, a complex series of alternative factors, either multiple alleles or pairs of very closely linked genes, were discovered at or near the Rh locus. Rh-negative was recessive to all other factors but the others showed lack of dominance among themselves in heterozygous combinations.

Considerable progress was made in the study of linkage, the relative positions of the genes in the chromosomes, in man. The sex chromosomes, X and Y, contain three regions, one peculiar to the X and not found in the Y, one peculiar to the Y and not found in the X, and a homologous region found in both. By studying the partially sexlinked genes in this homologous region where crossingover can occur between X and Y chromosomes, J. B. S. Haldane was able to construct a genetic map of this part of the sex chromosomes. In brief, the method was to study in family pedigrees of the genes concerned their amount of crossing-over with sex, thus determining their position on the homologous portion of the X and Y in respect to the point where this homologous portion is joined to the non-homologous region. A map of 34 genetic units in length and including seven genetic loci in addition to the o.o point was constructed. Probable cases of autosomal linkages began to be reported.

J. V. Neel and W. N. Valentine showed that the rare blood disease, thalassemia, fatal in infants unless given transfusions, was due to an incomplete recessive. They reported on the blood picture of the heterozygotes. W. G. Lennox, E. L. Gibbs and F. A. Gibbs found the electroencephalograms, brain waves, in monozygotic twins to be markedly similar in character. A brain wave pattern, inherited as a dominant, was found to be associated with a predisposition to epilepsy.

Higher Animals.—The progress of linkage studies in Vertebrates was marked by the publication in 1940 by F. B. Hutt and W. L. Lamoreux of linkage maps for 6 of the 40 chromosomes of the domestic fowl. Twenty-one mutant genes were located, and the linkage data gave a total of 270 map units. In 1945, C. C. Little and colleagues published linkage data on the mouse with linkage maps for 10 of the 20 chromosomes and a total of 29 gene loci. Several of these loci contained known multiple allelic series. The total map distance was 204. These data indicated that fowl and mouse chromosome maps when completed would prove to be much longer than those of the *Drosophila* species studied.

In the field of biochemical genetics M. R. Irwin, R. W. Cumley and L. J. Cole studied antigens present in the red blood cells of several species of doves and pigeons. They found through species cross-tests that species A and B might differ from each other in certain antigens, while they shared in common other antigens not found in species C. In hybridization experiments they demonstrated that these antigens were gene determined. Their work lent support to the theory that the individual gene produces or conditions one primary chemical product.

In evolutionary genetics rapid advances were made, particularly on the genus *Drosophila* in studies of the genetic structure of populations within a species and evolutionary divergence at the sub-species and species level. Sewall Wright continued to lay the theoretical foundation for studies in experimental evolution by the publication of papers on the mathematics of micro-evolution, dealing with such factors as mutation rates, mating systems, population size and fluctuation, isolation and gene frequencies within populations.

Theodosius Dobzhansky and colleagues carried on a series of notable investigations on populations of Drosophila pseudoobscura throughout the western part of the U.S. and in Mexico. They showed that certain chromosomal inversions in this species had become widespread in nature and demonstrated seasonal differences in the frequencies of these gene arrangements, interpopulation differences and in some cases large scale geographical clines in their distribution. They also made an extensive study of lethal gene frequencies in populations of this species from season to season and year to year. N. P. Dubinin, R. L. Berg and others made extensive studies on populations of Drosophila melanogaster in Russia, dealing particularly with lethal gene frequencies and the significance of their distribution and fluctuation in numbers. P. T. Ives carried out a similar investigation of lethal genes in U.S. populations of this species and found some populations with most of the flies carrying lethals in heterozygous form.

A. H. Sturtevant, Theodosius Dobzhansky and others reported cases of evolutionary divergence at the incipient species level in *Drosophila*. By far the most extensive study in this field was reported by J. T. Patterson and colleagues. They made extensive collections of the Drosophilidae of the U.S. and Mexico, and described many new species. By laboratory breeding studies they demonstrated upwards of 50 different species or sub-species crosses. Cases ranged from complete hybrid sterility to more or less complete fertility of the hybrids of one or both sexes. Various isolating mechanisms were discovered in the course of this work, and it was concluded that the evolutionary mechanism differed somewhat from species group to species group.

Boris Ephrussi and G. W. Beadle transplanted eye discs from larvae of eye-colour mutants of *Drosophila melano*gaster into wild-type larval hosts of the same species. They demonstrated that certain hormones were present in the host under the influence of which the transplant of certain mutant types developed non-autonomously. This transplantation technique was used by other workers to study various species. Many interspecific transplants were made.

In a study of gene action, Curt Stern showed that the mutant gene, cubitus interruptus, in *Drosophila melanogaster* has an effect cumulative toward the wild-type character in haploid, diploid and triploid doses. From reactions of the "ci" alleles in these combinations and in heterozygous combinations with wild-type alleles, he formulated a theory of gene action based on the presence of and amount of a substrate in the cell, combining action of gene and substrate, and efficiency of gene in utilizing substrate. E. B. Lewis demonstrated by combined genetic and cytological studies that the genes Star and asteroid were in a double band at the left end of salivary chromosome II.

By testing natural mutation rate in some 200,000 X-chromosomes of *Drosophila melanogaster* H. J. Muller demonstrated that the rate was two to three times higher in the spermatozoa from young males than from older males. K. Mampell reported a recessive mutator gene in the second chromosome of *Drosophila persimilis* which greatly increased mutation rate.

P. W. Whiting showed that in the wasp, *Habrobracon*, sex was determined by a system of multiple alleles; the female sex was always diploid and heterozygous, while males could be either haploids or diploids homozygous at the sex locus.

Higher Plants.—In the cytogenetics of the higher plants the most spectacular discovery of the decade was that the alkaloid, colchicine, would produce chromosome doubling by arresting mitosis at a point when the chromosomes had split into two sets but before the cell division was completed. Following preliminary experiments by O. J. Eigsti on the roots of several plants, A. F. Blakeslee and coworkers produced chromosome doubling by this means in some 48 species of plants, representing 29 genera and 16 families. Chromosome doubling was induced in roots, leaves, buds and seeds. Many other investigators applied the drug to large numbers of species. The tetraploid plants produced often bore larger flowers, seeds and other structures. The method proved of particular value in plant hybridization studies. Many sterile hybrids between species or even genera could be changed into fertile allotetraploids by the induction of chromosome doubling.

S. C. Harland and B. A. Silow published extensively on hybridization in cottons, dealing with the transfer of genes from one species to another and their expression in the new reaction system. C. D. Darlington and his colleagues studied the mechanics of meiotic cell division in plants, utilizing species hybrids for resolving many of the problems. Barbara McClintock made an extensive study of the behaviour of ring chromosomes in corn. She also reported a series of terminal homozygous deficiencies of different lengths in a corn chromosome and showed that these deficiencies of varying lengths behaved as a series of multiple alleles in heterozygotes. M. M. Rhoades described a gene in corn which caused a high mutation frequency from recessive to dominant at another locus. Using this recessive gene, L. J. Stadler demonstrated that no such dominant mutations were induced by X-rays. He demonstrated a qualitative difference between X-ray induced mutations and those produced by exposure to ultra-violet light. Stadler concluded that at least in corn, X-ray mutations are chromosomal deficiencies and not point mutations. Ex-

periments by Karl Sax and others on chromosome aberrations in plants following X-ray treatment indicated healing of chromosome breaks following radiation. Consequently a time factor was involved in the application of a given dosage and its effect in producing multiple break aberrations.

Lower Organisms.—Biochemical genetics developed rapidly during the decade, particularly through studies on lower organisms, moulds, yeasts, protozoa, algae, bacteria and viruses. Only a few of the significant advances in this field can be mentioned here. The interested reader is referred to G. W. Beadle's excellent and comprehensive review "Biochemical Genetics" in *Chemical Reviews*, 37:15–96 (1945).

Franz Moewus discovered many natural gene mutations in the tiny unicellular alga, Chlamydomonas, and induced others by radiation. He worked out extensive chromosome maps for the species. A number of the genes reported were considered by Moewus and R. Kuhn to control specific steps in biochemical reaction chains leading to hormonal end products. Mutants of these genes produced blocking of the chain of reactions at certain levels. A specifically gene controlled motility hormone was discovered which in one species induced the rapid growth of flagellae on previously immotile cells in concentrations as low as 1.2 molecules per cell. Five allelic genes at the female determining locus and five at the male locus were each shown, when cells were grown in the light, to initiate a chain of reactions leading to production of two isomeric forms of a chemical end product in a fixed ratio.

Filtrates containing each of the ten hormonal mixtures, known as gamones, changed sexually inactive cells having the same allele as those producing the filtrate into sexually active forms.

G. W. Beadle, E. L. Tatum and associates assumed that if specific steps in chemical syntheses were controlled by specific genes, it should be possible to find mutations which would block these syntheses at different levels. Following heavy X-ray dosages, single spore cultures of the bread mould, Neurospora, were grown on media enriched with substances normally synthesized by the fungus. Subcultures of some of these strains would not grow on minimal media. By further subculturing on partially enriched media the compound which the mutant strain was unable to synthesize was eventually identified. Different mutations, each blocking the synthesis of one of seven vitamins and of one of eight amino acids, were found. By further tests in certain cases mutants were discovered which blocked specific steps in the chain of reactions leading to the end product. Thus at least three gene controlled step reactions were demonstrated in the normal synthesis of the amino acid, arginine.

T. M. Sonneborn found two different types of *Paramecium*, "killer" and "sensitive." Sensitive races were killed when introduced into culture medium in which killers had been grown. The killer character was found to be conditioned by a cytoplasmic factor, "kappa." The kappa substance was produced only in the presence of a dominant nuclear gene, K. This gene was unable to initiate the production of kappa. However, if a little of the kappa substance was introduced into a genetically K individual lacking it, the cytoplasmic factor was then produced indefinitely in this animal and all of its descendants possessed the K gene.

In corn Rhoades reported a somewhat similar case of gene influenced cytoplasmic inheritance, and P. Michaelis

found plasmagenes transferred in species crosses in the plant, Epilobium. S. Spiegelman, C. C. Lindegren and G. Lindegren discovered a gene in yeast which produced an enzyme able to hydrolize the sugar, melibiose. Once formed, this enzyme was self perpetuating in the presence of a melibiose substrate, even if the original gene initiating its formation was replaced by one incapable of producing it. In a strain of the bacterium, Escherichia coli, sensitive to a given bacterial virus, S. E. Luria and M. Delbruck found many mutations to resistant types. Later they discovered mutations in the bacterial virus capable of attacking the mutant strains resistant to the original virus.

Much of the genetic work on lower organisms indicated that an individual gene initiated or controlled one specific chemical reaction, and that primary gene action was unitary rather than multiple. (See also BIOCHEMISTRY; BOIANY; CHEMISTRY; CHEMOTHERAPY; CHEMURGY; VITAMINS; ZOOLOGY.)

BIBLIOGRAPHY.—Genetics, vols. 22-31 (1937-1946); J. of Genetics, vols. 34-47 (1937-1946); J. of Hered., vols. 28-37 (1937-1946); Proceedings of the Seventh International Genetical Congress, Cambridge University Press (London, 1941); G. W. Beadle, "Biochemical Genetics," Chem. Rev., 37: 15-96 (Aug. 1945); T. Dobzhansky, Genetics and the Origin of Species, and ed. (1941); Julian Huxley, Evolution, the Modern Synthesis (1942); L. H. Snyder, The Principles of Heredity, 3rd ed. (1946). (W. P. S.)

Geographical Society, American

See Societies and Associations.

Geography

The decade 1937-46 was an eventful one for professional geographers. When World War II began, government officials charged with planning and directing the policies of nations, as well as the reading public, suddenly wanted the kind of information and analyses that geographers could supply. They wanted to know about a great many places they had scarcely heard of before. Geographers, at war or in peace, were busily engaged in describing the differences, physical and human, which exist from place to place, in devising more effective methods of identifying and presenting these differences and in trying to show the importance of them in human affairs. In ordinary times the public had been bored with geographic detail, unless it had been brilliantly coloured by the pen of a Harry Franck, or depicted as a background for bathing beauties. At the beginning of the decade, even in the schools, future citizens were being trained with only elementary concepts of geography. And then, suddenly, the kind of work geographers do was in demand.

Before World War II.-For the English-speaking peoples on both sides of the Atlantic, the decade of the 1930s which culminated in the outbreak of World War II was marked by a series of increasingly serious emergencies. Many geographers were directing their studies and writings toward the pressing problems of the moment. There were problems of employment, of the conservation of resources. of the planned use of land both rural and urban and many others. There was an increasing need for detailed information about soils, slopes, water and the record of man's experience with the utilization of these things in specific areas. Some geographers were engaged in land inventories; they prepared detailed maps of the physical and human factors deemed to be significant in specific areas, and they wrote reports analyzing the facts they had shown on maps in terms of the economic, political or social problems of the area. Others were devising and testing techniques for the rapid collection of important data in the field, and for

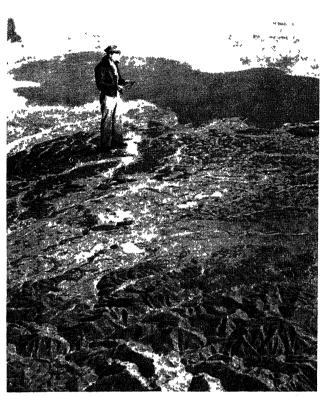
the effective marshalling of these data for the use of the planning officials.

In Great Britain the Land Utilization survey had been established in 1930 and had completed a major inventory in great detail of the lands and kinds of land use in England, Scotland and Wales. In 1936 the survey had become an independent organization whose financial support came from the public sale of its maps and reports and the donations of its patrons. The survey had established its importance in providing the basic data necessary in any planned readjustment of rural or urban land use. It provided, moreover, a model of organized co-operative effort in a capitalist society, making use of the services of great numbers of untrained persons under the supervision of professional geographers.

In the United States this phase of geographical work was carried on by a great variety of agencies and was, on the whole, less complete than the British survey. The Tennessee Valley authority had included a staff of geographers to carry out an inventory of the physical properties of the land and of the nature of the land use, and to study other specific problems related to the work of the authority. The national resources planning board, through a subcommittee of its land committee, described a new procedure for the rapid analysis of the employment situation in an area of county size, and for the preparation of a series of recommendations pointing to the possible readjustments leading to fuller employment or more effective use of local resources. This procedure, published as Technical Paper 6 of the national resources planning board (Area Analysis, A Method of Public Works Planning, 1943), was tested in the actual field survey of a variety of areas. The land committee also made a study of existing practices in land classification throughout the United States (Land Classification in the United States, 1941). The soil conservation service carried out experiments in the detailed field analysis of water run-off and soil erosion. Among the projects set up one was designed to measure the incidence of rainfall at 15 minute intervals during the passage of single storms over a small area, and the effect of different kinds of vegetation cover on the resulting run-off. Much new light was thrown on the conditions leading to land destruction and to floods. In many states, and in Alaska and Puerto Rico, geographers were employed to study many aspects of the problems of land use and resource conservation.

During this time the American Geographical society of New York was continuing and bringing to completion its "Millionth Map of Hispanic America." This undertaking, begun nearly two decades earlier, involved the collection and evaluation of all available maps and surveys for different sections of Latin America, the actual field survey of parts where no existing maps were adequate and the compilation of the results on a map on the scale of 1/1,000,000, conforming to the standards of the International Map of the World. These maps, and others derived from them, provided an indispensable tool for all further geographic research in this area.

Not all the professional geographers in the United States, however, were directing their research studies to these local practical problems. A small number were specializing in the study of foreign regions. Through periods of foreign residence they were gathering material for numerous books and articles and preparing themselves to speak with authority concerning problems and conditions of specific regions. With few exceptions, they were working in Latin America or Asia. Others were investigating such problems as the origin of the maize plant, or were de-



A huge miniature of Japanese military targets, built on a scale of one foot to the mile. From this and similar stage sets, motion pictures were made for briefing B-29 pilots in the bombing of Tokyo, Nagasaki, Hiroshima and Yokohama

veloping the concepts of political geography. A very considerable proportion of the time of the geographers in universities was given to the writing of text books.

Geography in World War II.—The beginning of World War II immediately increased, and for the most part redirected, the work of professional geographers. One important result of the pre-war emergency, at least in the United States, had been a steady increase in the number of graduate students specializing in geography. When the time came to staff the new war agencies there were not nearly enough established professional geographers either in Great Britain or in the United States to occupy the positions where geographers were needed. Of the hundreds of geographers who worked in British and U.S. civilian war agencies or on the research staffs of the army or navy, the larger proportion were men and women who had not completed their graduate training. Even college undergraduates who had had some courses in geography were given further rapid training and set to work. And not a few who had had no previous contact with the field were also used.

There were at least eight chief kinds of research work performed by geographers during the war. These were:

Detailed Regional Surveys.—Geographers on both sides of the Atlantic were employed in research agencies to compile detailed regional or country monographs. The purpose of these monographs was to bring together in readily usable form for nongeographers the essential information about an area needed by the military, naval or civilian authorities for strategic planning. They included a variety of kinds of information: detailed descriptions of terrain,

beaches, vegetation cover, climate, water supply, transportation and communications facilities, industries and resources, towns and ports, characteristics of the people, political and economic organizations and many other details. Geographers contributed well over half of the material in these books, and the responsibility for over-all editorial supervision was, in most cases, placed on professional geographers. There were several important series of such monographs.

Resource and Commodity Surveys.—In several of the war agencies dealing with economic problems, geographers made important contributions. Unlike World War I, however, in which studies of production, consumption and trade by countries were made in considerable part by geographers, in World War II such studies were largely done by economists. In some instances, however, geographers were used for the preparation of specific studies on topics concerning which they could speak with authority, or they worked with economists especially on problems requiring a knowledge of the details of distribution. In Britain the maps of the Land Utilization survey were used for the wartime re-arrangement of agriculture, the placing of camps and airfields and many other purposes.

Cartography.—A major contribution was made in the field of cartography. Partly in connection with the regional studies, partly separate from these, geographers were called upon to present in map form many facts of a regional, as opposed to a topographical or local, importance. Entirely new techniques of cartographic representation and reproduction were devised. (See Cartography.)

Topographic Models.—Another field in which geographers played a most important part was in the production of topographic models on a regional scale. Here again entirely new techniques were devised which permitted the construction of models of large areas with much greater precision of detail than had ever before been possible.

Air-photo Interpretation.—A few geographers in the United States did important work on the development of the wartime techniques of air-photo interpretation. (See also Photography.)

Map Intelligence.—Before the war no systematic record was available of the published or manuscript maps of foreign areas. The American Geographical society (see Societies and Associations) had recorded the available sources for Latin America, but other parts of the world had no such coverage. Under the pressure of global war, professional geographers in the United States established such a survey of map sources. The work involved the search for maps in the files of government agencies and private businesses at home and abroad. It involved the description and systematic cataloguing of the maps, and the development of new methods of map evaluation.

Climatic Studies.—Geographers were employed in several branches of the U.S. army and in the United States weather bureau on climatic studies. The planning of warfare in widely scattered and diverse parts of the globe required more detailed information than had previously been available regarding the average weather conditions likely to be encountered. Studies of the development of new uniforms and other equipment adapted to use under various climatic conditions were made; new climatic categories and new maps were prepared.

Geographic Names.—The war gave new prominence to the work of the board for geographic names in the United States department of the interior. A large staff studied foreign maps and prepared gazetteers of place names. In addition to these kinds of research undertaken by geographers, a few members of the profession occupied administrative posts where their training in handling many aspects of regional problems perhaps gave them special aptitude for the planning, supervision and co-ordination of research.

But not all the geographers who worked long hours in war service during this emergency period were in war agencies. Those who remained at the universities were also called upon for unusual tasks. During the war, U.S. universities were crowded with students in the army specialized training program, working in pre-meteorology, in one of the several area and language programs or on other types of study devised to fill the need of the armed services for men and women with special knowledge of certain areas or certain techniques. For most of these programs one or more courses in geography were required. With staffs seriously depleted, the remaining teachers had to carry a heavy burden of class work, and in addition had to recruit and guide their less urgently employed colleagues in methods of geography instruction. As a result of these instructional programs, a much larger proportion of college students were given some contact with elementary geography than would have been the case under normal conditions.

After the War.-With the conclusion of World War II the demand for professional geographers in the United States continued to exceed the supply of trained persons. On both sides of the Atlantic many young men with war training in geographic research returned to take some of the new positions available. Although the war agencies were greatly reduced or entirely disbanded, new government positions in the "old-line" agencies became available for geographers. There were both federal and state agencies in the fields of land planning, reclamation, conservation, applied climatology, intelligence work in foreign areas, cartography, map intelligence and many other topics. Private business, too, was providing an opportunity to test the value of geographic studies in such fields as the evaluation of cargo or passenger potentials for air lines, or the location of retail stores. Many new geography departments were established in colleges and universities, and older departments were enlarged.

* * *

Geographers did not pass through this eventful ten-year period without developing or modifying certain of their concepts. The very old discussion of the relative merits of the topical and the regional approach continued throughout the war, with frequent reorganizations of war agencies first in one direction then in the other. Ever since Bernhardus Varenius there had been topical, or systematic geographers, who devoted themselves to a study of specific topics such as climate, soil, transportation, industrial location or political geography; and there had been regional geographers, who devoted themselves to the study of the various aspects of one area or region. The war experience showed clearly that both kinds of approach were needed. but it also showed that whereas the normal three or four years of graduate training could develop a reasonably competent topical specialist, a much longer period of time was required for the development of similar regional competence.

The war experience also suggested that geographers should pay increased attention to cartography. This did not mean the kind of topographic surveying that engineers are called upon to make. It means that geographers had become especially responsible for the use of maps in the

analysis of problems in which relative location, area or shape were of importance. In the war agencies economists, historians, political scientists, geographers and others learned, sometimes painfully, to work together. Four fundamentally different methods of attacking problems appeared: a documentary method, a statistical method, a method of case study and a cartographic method. Geographers, as well as other social scientists, used all four methods; but geographers, more than any of the others, were charged with the development of cartographic methods and techniques. At the end of the decade the question remained unanswered whether this wartime co-operation would have permanent effect in bringing the social sciences closer together without the loss of the distinctive contribution each of them could make to their common social, political or economic problems. Geographers, looking to the future, were strengthening their cartographic staffs, and had become more clearly conscious of their distinctive place among the social sciences. (See also CARTOGRAPHY; GEOLOGY; GEOPOLITICS; PHOTOGRAPHY.)

BIBLIOGRAPHY.-Among the outstanding books published during the period 1937-46 the following may be listed as generally representative of professional geographic writing: Richard any representative of professional geographic writing: Richard Hartshorne, The Nature of Geography (1939); Derwent Whittlesey, The Earth and the State (1939); Samuel W. Boggs, International Boundaries (1940); Preston E. James, Latin America (1942); Robert S. Platt, Latin America, Countrysides and United Regions (1942); Ralph H. Brown, Mirror for Americans (1943); George B. Cressey, Asia's Lands and Peoples (1944); Glenn T. Transfer Medical Maintenance of Trewartha, Japan (1945); Ellsworth Huntington, Mainsprings of Civilization (1945).

Geology

Great strides were made in the science of geology during the decade 1937-46 in spite of the retarding influence of World War II. While there was a noticeable reduction in the writings devoted to pure geology and considerable destruction of educational and geological survey facilities and of libraries and museums, this was compensated for somewhat by the volume and quality of the literature in applied geology. In the United States two important geological magazines-the Journal of Geomorphology and the Pan American Geologist-were discontinued. Several periodicals devoted to geology in the war-ridden countries of Europe and Asia also ceased publication, and many others had an uncertain and irregular distribution.

After the very successful meeting of the International Geological congress in Moscow in 1937, further conventions of this organization were discontinued because of the war.

The regular annual meetings of geological organizations over the world were also generally discontinued during the war years.

On the more favourable side of the picture were the following:

- 1. The great awakening to the importance of research in geology, stimulated by the development of atomic energy and by the establishment of the Penrose fund of the Geological Society of America and other research funds.
- 2. The realization of the need for conservation not only of soil, but also of mineral wealth in general.
- 3. The increasing application of geology in mineral explora-tion attendant upon the world-wide search of strategic min-
- erals by the nations at war.

 4. The greater application of geophysics as a tool of the
- geologist.
 5. The rapid rise of aerial photography and its applications in cartography and geology.
 6. The recognition of the need of a parent geological organization in the United States which might wield a greater influence in national affairs. Plans were under way at the end of the decade for the founding of the American Geological Institute.

- The trend of geology toward a more quantitative science and the development of applications to many new fields.
- The fuller appreciation, though considerably delayed in the United States, of the value of the application of geological
- knowledge in the successful conduct of military operations.

 9. The increasing interest on the part of both educators and applied geologists in the improvement of the curricula in geology and geological engineering in the educational institutions. Greater emphasis was placed upon a stronger background in field geology, mathematics, physics, chemistry and basic engineering, and upon the completion of one or more years of graduate study before entrance into the fields of pure and applied geology. Greater effort was also made to encourage more promising students to enter the earth science professions rather than to specialize in physics, chemistry and certain other better-known branches of science.
- 10. The greater success in educating the layman to the importance of the science of geology in national welfare.

 11. The accumulation of a wealth of data on subsurface
- geology, paleogeography and related subjects derived especially from deeper drilling for petroleum and natural gas in proved areas and from exploration work in general. There was a trend toward the evaluation of this information and its co-ordination with that accumulated from other sources over the years. Many valuable contributions to geology were resulting from this pro-

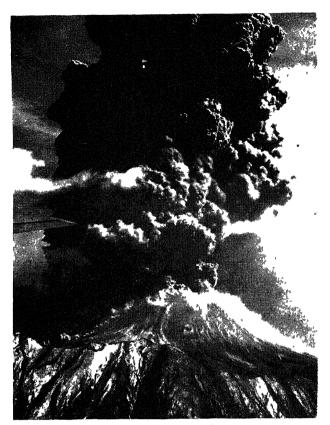
Because of the extensive diversion of geological personnel and of students majoring in geology to the armed forces and to the exploration for and development of strategic minerals, there was a dearth of geologists during the war years both in pure and applied fields. This scarcity was alleviated to a considerable extent by the return to their normal occupations of veterans and others so diverted and of a large number of former students in geology to the educational institutions. However, it was anticipated that there would be a serious shortage of geologists over the world for a number of years to come. This situation would be aggravated by the need for more than the usual amount of exploration work required to replenish greatly depleted reserves of minerals heavily drawn upon during World War II. It was estimated by competent authorities that the mineral production of the world during the years 1916-46 was equal to that taken from the ground in the whole previous history of mankind.

The records of the Office of Scientific Personnel of the National Research council indicated that, as of Dec. 31, 1944, there were 440,000 registrants. Of this number, geologists and geophysicists constituted 1.9%.

A new international organization entitled Pan American Institute of Mining Engineering and Geology (P.A.I.M. E.G.), was organized. The first meeting was held at Santiago, Chile, in Jan. 1942. By 1946, seven countries-Argentina, Brazil, Bolivia, Chile, Peru, Uruguay and the United States of America-had established national sections of the organization.

Dictionaries and Histories.—The appearance of the "Lexicon of Geologic Names of the United States (Including Alaska)," by M. G. Wilmarth as a Bulletin of the U.S. Geological survey in 1938 constituted a boon to geologists. Other gaps in geologic literature were filled in 1945 by the Dictionary of Geological Terms, by C. M. Rice and the Diccionario y Nomenclatura Geológica en Castellano, Alemán, Ingles, by Heriberto Windhausen (Argentina).

The Birth and Development of the Geological Sciences came from the pen of Frank D. Adams in 1938. In celebration of the half-century mark in its history, the Geological Society of America published in 1941, as a special volume, Geology, 1888-1938. This contained reviews of developments in each branch of geology and paleontology and in mineralogy and exploratory geophysics during that period by competent authorities in each field.



Eruption of Mount Vesuvius in 1944. The volcano became active on March 18 in a major outbreak, spewing lava, gas and ashes until March 24, when it subsided again. Several Italian towns in the path of the lava flow had to be evacuated

Oceanography.-Progress in the geological aspects of oceanography were high-lighted by the development of new techniques in sounding which revealed startling facts regarding the topography of the ocean floor, as well as in the collection of bottom samples by means of the Piggot gun. Great submarine canyons not previously known were detected on the continental shelves as well as in the bathyal zones. Extensive investigation of these features resulted in the development of a variety of hypotheses regarding their origin. The conflicting interpretations were considered at length by Douglas Johnson in The Origin of Submarine Canyons, A Critical Review of Hypotheses (1939), and by R. A. Daly in The Floor of the Ocean, New Light on Old Mysteries (1942). Geophysical methods were applied to the determination of the thickness and structure of the sedimentary deposits on the continental shelves. Anticipated exploration of the continental shelves for oil and gas rendered this development of special interest.

The results of the survey of the continental shelf off southern California by K. O. Emery and F. P. Shepard, published in the April 1945 Bulletin of the Geological Society of America, revealed extensive areas of consolidated rocks in many cases identical in lithologic character and age to known formations on the mainland. Sedimentation was taking place only in the basins and troughs.

The entire field of oceanography was excellently covered by H. U. Sverdrup, M. W. Johnson and R. H. Fleming in the voluminous work, *The Oceans, Their Physics, Chemistry and General Biology* (1942).

Geomorphology.—A new magazine entitled Journal of Geomorphology appeared in 1938 as a publication of

the Columbia University press under the editorship of Douglas Johnson. This was discontinued in 1942 as a result of the war.

The subject of landslides and related phenomena was covered comprehensively by C. F. S. Sharpe (1938) in a publication of the Columbia University press. Parry Reiche surveyed the subject of weathering processes and products and introduced some new concepts in a 1945 publication of the University of New Mexico.

N. M. Fenneman issued, as the second volume of his two-volume work on the physiography of the United States, Physiography of Eastern United States (1938). A comprehensive work by W. W. Atwood on The Physiographic Provinces of North America (1940) also constituted an important contribution.

During the period 1939-43, four valuable textbooks on geomorphology appeared in the United States. These were by A. K. Lobeck, O. D. von Engeln, N. E. A. Hinds, and P. G. Worcester. A fifth appeared in England by C. A. Cotton.

This branch of geology had definitely come of age, and the term "geomorphology" had displaced to a considerable extent the formerly widely accepted term "physiography."

General Geology.—The appearance of several popular books on geology aided materially in educating laymen to the importance of the science of geology. Among these should be mentioned Biography of the Earth, Its Past, Present, and Future, by George Gamow (1941); Rocks and Rivers of America, by E. W. Shuler (1945); Geology in the Service of Man, by W. G. Fearnsides and O. M. B. Bulman (1944); and Geology for Everyman by Albert Seward (1944). The latter two were British authors.

A stimulating paper by C. G. Croneis entitled "Geology in War and Peace" was published in the July 1942 Bulletin of the American Association of Petroleum Geologists. In the Daly Volume (1945) of the American Journal of Science, there appeared a symposium on 26 topics by 28 authors entitled Problems in Geology and Geophysics. This brought out the newer developments in several fundamental phases of geology.

Physical Geology.—Several revisions of well-known text-books on physical geology appeared during the decade. The literature on this subject was also enriched by several new texts, such as *Principles of Physical Geology* by Arthur Holmes (1945). The possibilities in the application of more quantitative methods in this branch of geology were indicated by the excellent paper of R. E. Horton on "Erosional Development of Streams and Their Drainage Basins; Hydrophysical Approach to Quantitative Morphology," published in the *Bulletin* of the Geological Society of America for March 1945.

In Physics of the Earth, Pt. 7; Internal Constitution of the Earth, a symposium edited by Beno Gutenberg (1939), many basic ideas regarding the fundamental properties and character of the earth's crust and its interior were brought out.

Historical Geology.—Greater attention was given to the preparation of more accurate paleogeographic maps for the different stages of geologic time and of paleogeologic maps, because of the importance of such maps in the exploration for stratigraphic traps for oil and gas. In 1940 A. W. Grabau's The Rhythm of the Ages; Earth History in the Light of the Pulsation and Polar Control Theories, published in Peking, presented an expansion of his original hypotheses brought out in his extended treatises on Paleozoic Formations in the Light of the Pulsation Theory.

Several important articles appeared on the much-mooted

question of the time of appearance of man in North America. The Last Million Years; A History of the Pleistocene in North America, by A. P. Coleman, edited by G. F. Kay, was issued in 1941. A well-written elementary text on historical geology came from the pen of R. C. Hussey in 1944, and a revision of the widely used textbook on historical geology by Charles Schuchert and C. O. Dunbar appeared in 1941.

Sedimentation.—The outstanding contribution to the literature on sedimentation was W. H. Twenhofel's Principles of Sedimentation (1939). Much valuable information was obtained from the study of marine bottom sediments by the Wood's Hole Oceanographic institute and by other similar organizations. The comprehensive work, Recent Marine Sediments, a Symposium, P. D. Trask, editor, published by the American Association of Petroleum Geologists in 1939, supplied a wealth of information on this phase of sedimentation. The soil conservation service of the United States government also made many valuable contributions to the subject of soil erosion and reservoir siltation.

"Sediment-Heft," a symposium (Geol. Rundschan, volume 29), presented the results of European investigations in this field. Geochronologia Suecica; Principles, by Gerard De Geer, published in 1940, treated of geochronology, particularly as revealed by the study of varves and attendant phenomena in the Stockholm region of Sweden. The May 1945 issue of the American Journal of Science contained a valuable symposium on loess presented at the earth science section of the Nebraska Academy of Science in 1944 under the co-chairmanship of C. B. Schultz and M. K. Elias.

Glacial Geology.—A technique based on the depth of leaching of calcareous drifts for differentiating drift sheets and for estimating the relative duration of post-glacial time and of the Illinoian-Wisconsin interglacial interval was developed.

The report of H. W. Ahlmann and his associates (1938) on investigations in Spitzbergen and Iceland furnished valuable information on the physical differences between high-latitude and lower-latitude glacier ice which was of potential value in the development of an understanding of the glaciation of the Pleistocene epoch.

The study of glaciers was aided greatly by the application of seismic methods to the determination of the thickness of the ice and by the use of aerial photographs.

Stratigraphy.—The general realization of the need of the proper appreciation of facies relationships and of the importance of the proper understanding of facies faunas led to remarkable improvements in technique in the interpretation and correlation of geological formations.

The monumental work by Charles Schuchert on Stratigraphy of the Eastern and Central United States (1943) illustrated the value of systematic regional correlations. The committee on stratigraphy of the National Research council (C. O. Dunbar, chairman) sponsored the preparation of a series of correlation charts of the geological systems of the United States, with appropriate explanatory text matter. Many of these were published in the Bulletins of the Geological Society of America.

Structural Geology.—The decade was characterized by many new concepts regarding the constitution of the interior of the earth as revealed by seismic and other evidence; by a veering away from the hypothesis of continental drift as postulated by A. Wegener; by the contribution on the structural behaviour of igneous rocks by Robert Balk, which appeared in Memoir 5 of the Geological Society of America; and by the developments in structural

petrology based upon the study of grain orientation. Memoir 6 of the Geological Society of America, entitled "Structural Petrology," by Eleanora B. Knopf and Earl Ingerson (1938) presented developments in that subject.

The much-cited paper by M. K. Hubbert on the "Theory of Scale Models as Applied to the Study of Geologic Structures" appeared in the Oct. 1937 Bulletin of the Geological Society of America. Strength and Structure of the Earth, by R. A. Daly (1940) embodied a keen analysis of the theory of isostasy.

A tectonic map of the United States, a product of the labour of nineteen members of the committee on tectonics of the division of geology and geography of the National Research council, was issued by the American Association of Petroleum Geologists in 1944. A valuable textbook, Structural Geology, by Marland Billings came from the press in 1942.

Vulcanology.—The compilation of data at observatories on some of the better known volcanoes over the world promised to assist in the solution of basic problems of vulcanism.

The outbreak and development of the volcano Paricutin in a corn field some 200 miles west of Mexico City in Feb. 1943 stimulated great interest in this phase of geology. This was said to be the first development of a volcano whose entire history had been observed and recorded by man. A new committee of the National Research council headed by R. E. Fuller was appointed for the study of the volcano.

Two works on vulcanology of more than ordinary value were *Volcanoes as Landscape Forms*, by C. A. Cotton (1944) and *Volcanoes Declare War*, by T. A. Jaggar (1945). The latter author, as a result of many years of experience at the observatory on Kilauea, wrote with more than an ordinary background.

Petrology and Petrography.—The role of physical chemistry as a tool of the petrologist was exemplified by Paul Niggli's volume (1937) on Das Magma und Seine Produkte; I. Teil, Physikalisch-Chemische Grundlagen. During the ten-year period, the series of four volumes of A Descriptive Petrography of the Igneous Rocks, by Albert Johannsen was brought to completion. This constituted a most valuable reference work. In the Manual of Sedimentary Petrography (1938) by W. C. Krumbein and F. J. Pettijohn, the importance of quantitative measurements of the characteristics of sedimentary rocks was emphasized. Another valuable work on sedimentary petrography was Methods of Study of Sediments by W. H. Twenhofel and S. A. Tyler (1941).

Regional Geology.—Significant in the field of regional geology was the appearance of Volume I of a projected three-volume reference work entitled Geology of North America, edited by Rudolf Ruedemann and Robert Balk (1939). This was of the series Geologie de Erde (Berlin) under the editorship of Erich Krenkel. Eastern North America, including Greenland, was described.

The Geology of China, by J. S. Lee (1939), Professional Paper 192 of the U.S. Geological Survey on Alaska (1939) by P. S. Smith, and Geologia do Brasil by A. I. De Oliveira and O. H. Leonardos should also be mentioned.

Hydrology.—Several new concepts were developed regarding the circulation of underground water, including the encroachment of salt water in aquifers heavily drawn upon in the Atlantic and Gulf coastal plains and the view that the elasticity of fluids in reservoirs and of the reservoirs themselves might play an important role in the

movement of fluids underground as pressure is lowered during production.

There was extensive development of underground water in surface gravels in the Great Plains region for irrigation by pumping. An exhaustive treatise on *Ground Water* by C. F. Tolman appeared in 1937. An important symposium on *Hydrology*, edited by O. E. Meinzer was issued as Part 9 of the National Research council's *Physics of the Earth* series in 1942.

Mining Geology.—Greater emphasis was placed on detailed field observations of ore deposits and on laboratory experiments as an aid in solving problems of mineralization. Probably the most important single contribution to mining geology was Ore Deposits as Related to Structural Features (1942), a symposium by 65 contributors edited by W. H. Newhouse. A. M. Bateman's Economic Mineral Deposits (1942) became widely used as a text and reference work.

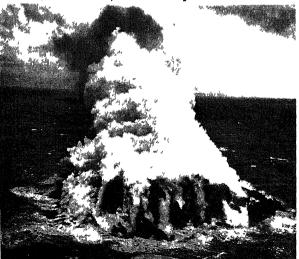
T. S. Lovering's Minerals in World Affairs (1943) and the book by C. K. Leith and others on World Minerals and World Peace (1943) indicated the interest which had developed, in part as a result of World War II, in the international aspects of mineral deposits. In 1946 J. D. Forrester published a book on Principles of Field and Mining Geology which should be a great aid to teachers and students of these subjects.

The discovery and development of an important copper deposit in Vermont lent weight to the view that other important mineral deposits awaited the prospector. In many nations of the world intensive searches for uranium deposits were conducted as a result of the potentialities uncovered by the development of atomic energy.

Sea water, which was drawn on to a limited extent during World War II as a source of certain metals and salts, promised to become an even more important source of minerals in the postwar period.

Petroleum Geology.—During 1938 The Science of Petroleum, edited by A. E. Dunstan and others, appeared as a four-volume work. Volume one relates to origin, distribution, migration, occurrence, exploration, production and related subjects. Stratigraphic Type Oil Fields, a sympo-

Two volcanic islands in the Pacific which first appeared in Feb. 1946, about 200 mi. south of Tokyo; two months later they were reported virtually submerged again. The cloud shown was formed by steam and sulphur fumes rising from the rocks



sium edited by A. I. Levorsen, was issued by the American Association of Petroleum Geologists in 1941.

The necessity of maintaining adequate proved reserves of petroleum and natural gas in the face of the diminishing size and productivity of the newly-discovered oil and gas fields stimulated exploration the world over. There was also noticeable improvement in discovery and development techniques. Geophysical methods, including electric logging and other methods of well logging, were improved and applied on an ever increasing scale. Encouraging aspects were the development of great oil reserves, especially in the Middle East and in Venezuela, and the discovery of petroleum in several countries previously unproductive.

Greater attention was given to the basic problems of petroleum geology. The most important of the fundamental investigations under way in 1946 was Research Project 43, "Transformation of Organic Matter to Petroleum," of the American Petroleum institute under the direction of a committee headed by G. M. Knebel.

In an effort to make the most of known reserves of petroleum, secondary recovery of petroleum from depleted pools occupied the attention of many competent technicians.

Among the trends in petroleum during the decade may be mentioned the tendency toward deeper drilling both in proved and in wildcat areas, greater emphasis on conservation, greater exploration in foreign countries, the search for stratigraphic traps and the exploration of the continental shelves.

Beginning with 1942, the Colorado School of Mines issued an annual Review of Petroleum Geology under the sponsorship of the research committee of the American Association of Petroleum Geologists, with F. M. Van Tuyl and W. S. Levings as editors.

Engineering Geology.—The marked success resulting from the application of geology to engineering problems in earlier years stimulated the applications to many outstanding construction projects during the decade. However, there was still a notable lack of the use of geology in highway construction work. The far-flung construction program of the United States reclamation bureau resulted in the building of a greatly enlarged geological organization in the bureau.

The leading publication in this field was Geology and Engineering, by R. F. Legget (1939). This emphasized the value of geology in large-scale construction work and in tunnelling and other ground operations.

Military Geology.—The axis nations greatly amplified the use of geology early in World War II. However, it was not until late in the war that the possibilities in this field were wholly appreciated by the military leaders of the Allied nations. By far the greater amount of geological advice to the armed services of the United States was rendered by the military geology unit of the U.S. geological survey. An informal statement dealing with the wartime contributions of this organization, prepared by the members of the staff of the unit, was issued by the Geological Society of America in 1945. The staff of the unit numbered 100, of whom 75 were geologists, soil scientists and other specialists. They received assignments from the intelligence division of the corps of engineers and compiled terrain intelligence folios on strategic areas.

Geology was widely used in the interpretation of aerial photographs. (See also Cartography; Geography; Marine Biology; Mineralogy; Palaeontology; Seismology.)

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Geometry

See MATHEMATICS.

Geomorphology

See GEOLOGY.

Geophysics

See GEOLOGY.

Geopolitics

The suicide of Karl Haushofer in March 1946 dramatically highlighted the collapse of the movement called "geopolitics" which he had founded, guided and personified. The ten preceding years had indeed been eventful. By 1935–36 the salient doctrines of geopolitics had been grafted into the burgeoning nazi state. After five years of fruiting on the sunny plateau of political favour, the taproot of Haushofer's "geopolicy" for Germany was cut by Adolf Hitler's attack upon the U.S.S.R., and with subsequent military reverses the blight spread swiftly.

That geopolitics should go into eclipse with the German military machine was inevitable because it was conceived and developed to make geography the servant of German militaristic statism. Karl Haushofer, an officer with a distinguished record as a member of the Bavarian general staff, resigned from the army two years before World War I in order to study geography. He had written two books on the territorial and military prospects of Japan when he was recalled to war service. He retired in 1919 (as a general) and became lecturer on geography at the University of Munich. There he devoted himself to the creation of a tool of policy which should help to lift defeated Germany once more to the pinnacle of military power.

To forge this tool he drew heavily upon political geography, while omitting awkward scientific facts and adopting only those concepts which promised to serve his political purpose. For this garbled political geography he borrowed the name "geopolitics" from the Swedish political scientist, Rudolf Kjellén. In the school of geopoliticians that he fostered was Rudolf Hess, through whose offices the doctrines of geopolitics were presented to Hitler and incorporated into that bible of naziism, Mein Kampf. After a few years, the sound geographers and political scientists who had been attracted by the new movement abandoned the field to a circle of uncritical devotees imbued with a mission to propagandize. The trend could be traced in the monthly periodical Zeitschrift für Geopolitik, which Haushofer founded in 1924 and edited continuously thereafter.

Once the nazi party was in power geopolitics came into official favour. Immediately, at the University of Munich, Haushofer was made professor of geopolitics, dean of the faculty of sciences and director of a newly

organized Institute of Geopolitics. The institute was an outgrowth of his university seminar, and was formed as a dragnet to gather information about the earth. It paralleled the service of "military intelligence" organized by the army general staff to collect facts for strategic purposes, but its scope was far wider, reaching out over the entire earth for geographic, demographic, economic and political information that might serve the German state in the "grand strategy" of total war. This material was classified by areas and was intended for twofold use—by government agencies and for propaganda and indoctrination.

An Arm of the Nazi State.—During the last ten years of its teaching, geopolitics permeated German life through several official organizations of the nazi state. They functioned either in research, education or planning, and often in more than one of these fields.

At the beginning of 1936 the National Bureau for Space Planning and Space Research (Reichstelle fur Raumordnung und Raumforschung) began operations under the control of the minister for public instruction. Its aim was the "purposeful reorganization of German Lebensraum," and it served as a means of injecting geopolitics into the public mind. It published a monthly magazine designed to popularize governmental plans for applying geopolitics to resettlement, relocation of factories and other matters affecting the use of space under nazi control; it took a hand in education by encouraging the study of geopolitics in the secondary schools, where courses in the subject were being introduced. After geopolitics was made a required subject in 1937, the bureau began to publish textbooks and pamphlets.

To prepare teachers for these courses and for cognate compulsory instruction in the lower schools and in the universities, study groups were set up within the National Socialist Teachers' association (National-sozialistischer Lehrer-Bund), an instrument of the ministry for public instruction. One of these groups studied the geopolitics of Germany (Heimatkunde), the aspect of the subject specified for the earlier years of schooling. The other group studied world geopolitics (Geopolitik), the subject for the later years. The teachers' association published a periodical embracing both subjects, significantly entitled Lebensraumkunde.

University instructors in geopolitics were formed into an Association of Workers in Geopolitics (Arbeitsgemeinschaft für Geopolitik), with headquarters at the University of Heidelberg. Other universities became seats of other agencies. At Berlin a school of political science (Hochschule für Politik), inaugurated in 1920 to engage in advanced study, had become a training school for foreign-service officers when the nazi authorities installed Karl Haushofer's son and student, Albrecht, as professor of geopolitics. At the beginning of 1941 this school was merged into the German Institute for the Study of Foreign Countries (Deutsches Auslandswissenschaftliches Institut) with a university faculty of its own.

The work of all research and educational institutions was integrated by the National Workers' Association for Space Planning (Reichsarbeitsgemeinschaft für Raumordnung). It reached out into the universities, penetrated the public school system of every administrative district, and distributed propaganda to the general public. The output of the several organizations engaged in research was brought to the government through the House of National Planning (Haus der Reichsplanung), set up at nazi headquarters in Berlin in 1935. Like several other

agencies, it published a periodical (Reichsplanung). A still more ambitious co-ordinating arm of government followed near the turn of the year 1936—the National Workers' Association for Space Research (Reichsarbeitsgemeinschaft für Raumforschung). Its function was to maintain contact between the governmental, research and instructional organs of geopolitics. A prominent means of making this contact was an annual conference attended by party and government men, scholars from universities and research institutions and teachers from both the middle and upper schools.

By 1937, human geography in Germany had become geopolitics. No practitioner of the craft was allowed to lecture or publish unless he conformed to the new dogma. At all levels of instruction, propaganda for German supremacy was given a geographic gloss, and the methods of geography were utilized to the full in making comprehensive studies of parts of the world where the nazi government hoped to carry German arms or German ideas. In both the collection of data and the spreading of propaganda, maps were used freely and with telling effect.

Geopolitics and War.—Between the accession of the nazi party in 1933 and the outbreak of World War II in 1939, geopoliticians were actively realizing the two functions set for it by Haushofer. One of these was the accumulation and preparation of facts about the earth for use by the German government; the other was indoctrination of the public with the viewpoint of geopolitics in order to get general support for radical practices of space-planning, such as large-scale resettlement. The numerous organizations sketched in the foregoing section constituted the machinery for achieving these ends.

Both of the immediate objectives had the ultimate goal of preparing Germany for war. More than a century earlier the Prussian, Karl von Clausewitz, in his treatise On War had promulgated the doctrine that peace and war are merely different facets of a single state policy. Haushofer subscribed to this view. His system of geopolitics grew out of political concepts about the earth that could lead only to war. To begin with, he assumed that the state is an organism, inexorably subject to laws of growth and decay. From this he deduced the right of the young German state to Lebensraum; i.e., to seize all territory required for its growing organism. The area to be taken had to include all the variety of natural resources needed for economic independence from the rest of the world because autarchy was a military asset and hence ranked among the objectives of geopolitics. Obviously, autarchy could be achieved only by creating political units far larger than Germany. Such aggregations Haushofer called pan-regions-a term suggested by the Pan-German movement of 1890-1915, a direct progenitor of geopolitics. A suitable pan-region could not be much less than continental in scope. In the struggle to integrate such vast areas the world might expect to find itself in the throes of a conflict between land power and sea power, because these two forms of force are based on the earth distinction most fundamental to politics-continental versus maritime location. The active front for every step in this policy of expansion was the frontier. This area was a zone in which a political boundary line was drawn, but such a line was considered merely as a temporary stopping place, to be overrun as soon as the state had prepared itself for the next aggression.

To the geopoliticians Germany seemed eminently and even uniquely fitted to become the ruler of an everenlarging area. It was surrounded by other and weaker states; hence it was in a position to apply the theory of the temporary boundary in successive seizures of adjacent territory. These aggressive acts could be justified by the need for Lebensraum by the growing German state, on its path toward autarchy. In time Germany might hope to become regnant in a pan-region including most of central and western Europe plus Africa. To overpass the Mediterranean would fan into flame the latent conflict between land power and sea power, because the crossing to Africa by Germany (a land power) would threaten the ocean routes and the sea power of Great Britain and its natural maritime allies. The geopoliticians further held that in its homeland Germany occupied a unique position, lying close by the heartland or core of Eurasia, the largest potential seat of land power, and at the same time in immediate touch by way of its Atlantic frontage with the sea power of Britain, and beyond with all the maritime states of the four continents that lay in a great crescent peripheral to Eurasia. From this argument it became a tenet of the geopoliticians' dogma that Germany should join forces with neighbouring Russia, the occupier of the Eurasian heartland, and then from the combined base move to conquer the scattered strongholds of sea power.

Pinnacle and Abyss.—The treaty of Aug. 1939 between the nazi and soviet states was for Haushofer the crown of his life's ambition. It set the official seal upon the teaching of geopolitics and paved the way for German domination of the world. The 22 months that followed saw geopolitics at its height. One by one its objectives were being achieved.

Germany's southeastern frontier had been moved outward with the march of German armies into Austria in 1938 and into Czechoslovakia in 1938 and 1939. The remainder of the eastern boundary gave way in the attack on Poland which initiated World War II. By the middle of 1940, the frontiers on the north and west were battered down. As a result, Germany's commodious Lebensraum included nearly all of continental and peninsular Europe north of the Alps and west of Russia. The economy of the conquered countries was promptly subordinated to and integrated with that of Germany proper, which thereby obtained a large measure of autarchy.

The southern German boundary was technically left intact, but in practice it was pushed far back. Once Switzerland was surrounded by nazi-dominated territory it was compelled to participate in the German autarchy in particulars useful to its big neighbour. Italy and the Mediterranean Italian colonies were drawn completely into the German orbit in the guise of allied lands. Besides functioning within the realm of German autarchy. Italy became the antechamber to a widening Lebensraum in Africa opened by victories of German armies there. This stride overseas looked to be only the first toward realizing a Eurafrican pan-region in which Germany would figure as the dominant, organizing element. Already the entire western bulge of the African continent was neutral, with more benevolence than international law required-the bulk of it being controlled by the Vichy French government and the remainder by a Spanish

In moving across the Mediterranean, the German armies precipitated the issue of land power versus sea power. They rendered the Mediterranean sea useless as a route of commerce or of supplying British theatres of war and reduced British holdings to three widely separated garrisons. The British Isles themselves, historic seat of sea

power, were beleaguered by submarine blockade and aerial bombing (both land-based on the newly-acquired Lebensraum) and threatened with invasion by troops ferried across the channel. The alignment of world land power against world sea power would be complete with overt support of Britain by the United States of America and of Germany by the soviet union. Thus by the spring of 1941 the whole grandiose plan that had been partially devised and was enthusiastically championed by the geopoliticians seemed about to take practical shape.

Instead, it was demolished by the German attack on the soviet union in late June 1941. After that date it was futile to cherish the geopoliticians' dream of uniting Russian vast space, huge manpower and unfathomed natural resources with German central location, industrious population and skilful utilization of natural resources. Fear of this formidable and reciprocal combination had been expressed by the British geographer, Sir Halford Mackinder, at the end of World War I, and means of achieving it had ever after been sought by Haushofer as the capstone in the edifice of geopolitics.

Haushofer accepted the downfall of his hopes with outward resignation but some months later he was placed under arrest by the nazi government. Although he was subsequently released, his son and disciple, Albrecht, was executed for complicity in the attempt on Hitler's life in 1944. Less than a year later, U.S. invading troops seized him as one of the organizers of the German attempt to dominate the world. Not being indicted, he was allowed to retire to his country estate near Munich. In March 1946, his body and that of his wife were found on the estate under circumstances that were pronounced suicide.

Revival?-With its promoter dead and its methods discredited, geopolitics might be classed as history. Presumably the movement was defunct and its name discredited. But it was unsafe to assume that its underlying concepts had disappeared. It had kept alive and promoted aggression during one period of peace. Evidence was accumulating that the interchangeability of peace and war, as stated by Karl von Clausewitz long ago, had never been rejected by Germany. In any case, the position of Germany in the earth's political pattern remained unaltered. It still stood between the potential land power of the Eurasian continent and the possible combination of sea power of the North Atlantic basin-each the maximum conceivable aggregation of its type. So located, Germany continued to partake of the life and interests of both worlds and could shift its weight readily from one side to the other. By renewed manipulation of the ideas embodied in geopolitics, under whatever name, Germany might again be able to plunge the world into war. (See NATIONAL SOCIAL-(D. WH.)

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George II

King George of Greece (1890—), was born at Tatoi near Athens on July 20, 1890, the eldest son of King Constantine, and succeeded to the throne for the first time in 1922. Deposed March 25, 1924, after a series of uprisings, he spent the next 11 years in exile until his recall by the Greek assembly in 1935 upon the restoration of the monarchy.

When Italy began its invasion of Greece through Albania on Oct. 28, 1940, King George assumed command of the army, his popularity increasing with Greek victories in Albania. On April 23, 1941, when nazi troops approached Athens, he fled with his government to Crete after declaring that the fight would continue. He reached London on Sept. 22, 1941, and formed his government-inexile, pledging the restoration of democratic rule and the end of the dictatorship after the war. During the civil war following the liberation of Greece in 1944, the king continued in exile. In Nov. 1945 the republican and monarchist factions agreed that a plebiscite should be held in 1948 to determine whether George was to return, but the victory of the royalist party in the elections of March 31, 1946, advanced the date of the plebiscite to Sept. 1, 1946. Greece on that day voted overwhelmingly for the monarchy, and George II returned to Athens on Sept. 28, after five years of exile. He died April 1, 1947, and was succeeded by his brother, Paul I. (See Greece.)

George VI

George VI (1895—), king of Great Britain, Ireland and the British dominions beyond the seas, emperor of India, second son of the duke of York, afterward King George V, and Queen Mary, was born at York cottage, Sandringham, on Dec. 14, 1895.

His career and reign had close parallels with his father's. Each was educated without expectation of succeeding to the throne, and each entered the navy, so far as might be, "professionally." Again, each succeeded to the throne little known to the public men of his day and in times of abnormal difficulty. In each case, doubt was felt as to his ability to cope with the difficulties ahead, and each swiftly showed such doubts to be groundless. Each was soon leading the nation in a world war.

Prince Albert, as he was then known, enjoyed a happy childhood reasonably free from restrictions. He passed through the naval colleges of Osborne and Dartmouth at the usual ages and put in some terms at Trinity college, Cambridge university. He served three years as midshipman and seven as a lieutenant. He served in the grand fleet in World War I and was present at the battle of Jutland. In 1918 he was on the staff of the independent force, royal air force. In June 1920, he was created duke of York. On April 26, 1923, he married Lady Elizabeth Bowes-Lyon. Princess Elizabeth was born on April 21, 1926, and Princess Margaret on Aug. 21, 1930. The marriage proved an ideal one and was a turning point in his career. It gave him the partner with whom to share "the loneliest job in creation" and his tremendous responsibility.

In Dec. 1924 the duke and duchess paid an unofficial visit to East Africa, during which the duke gained knowledge of conditions in East Africa. Less widely travelled than were his father and elder brother, he had seen something of the empire during his naval service and with the duchess carried out an important visit to Australia to open parliament at Canberra in 1927. King George VI ascended the throne on Dec. 11, 1936, on the abdication of his elder brother, King Edward VIII. He was crowned in Westminster abbey on May 12, 1937.

The happiest selection guided the composition of the new court. Sympathy, simplicity, naturalness and gaiety were combined with the now traditional virtues of the monarchy—rigid sense of duty, irreproachable constitutional impartiality, good sense and good manners. The influence of the court began to permeate the wider circle of



King George VI (right) amused by comedians at a vaudeville show for the British home fleet in April 1943

society, which during the years between wars had gradually relaxed its standards of conduct.

The new king followed closely the pattern established by his father. In the weeks succeeding the coronation he was kept busy with the many ceremonial occasions attendant upon it, and there was an exceptional amount of reorganization connected with the abdication. The king and queen initiated as soon as possible a series of royal tours of industrial areas and entered on their ceremonial duties with dignity and confidence from the start.

In July 1938, in a universal atmosphere of tension, they paid a state visit to Paris while the king was still convalescent after illness, and they continued their tours of industrial centres. In the critical late summer of 1938 the king broke his Balmoral holiday, returning to London to receive Neville Chamberlain, then premier, and on Sept. 1 for the first time in history he paid a personal call at No. 10, Downing St., initiating a new precedent in the relations of sovereign and first minister, which became more common during Winston Churchill's war premiership. Preparations were now on foot, in view of the almost certainty of war, to repair the country's defenseless state and the king began to visit the training centres and secret headquarters of the fighting services all over Britain. The outbreak of World War II in Sept. 1939 found King George well informed in the preparations on foot in the services. In the course of that year the king and queen had paid a visit of first importance to the U.S. and Canada, making invaluable contacts. They cemented a warm friendship with Pres. Franklin D. Roosevelt and gave him and many leading Americans and Canadians a new view of the British monarchy and a fuller understanding of the character of the British people.

Throughout the years of World War II the king, like his father, lived much as did a commander in the field, carrying out the duties which fell to his lot. It was a younger court than that which set the pattern of endurance and courage, sacrifice and fellowship, in 1914–18. The same example and inspiration emanated from the throne; but to the older virtues of patience, duty, courage and faith there was added a cheerfulness.

Buckingham palace remained throughout World War II the king's headquarters. Often he dined with or visited Churchill in Downing St. When bombs fell on the city and the palace (within 50 yd. of where the king sat at his desk), the king and queen were among the first to walk amid the ruins, offering sympathy, counselling patience and encouraging endurance. No danger, no repugnance from horror, deterred them from the calm performance of their duty. They set the keynote of "London can take it." The royal family probably took more personal risks than had any British royal family since the Hanoverian line began.

World War II left King George VI at the apex of his powers and in the prime of manhood. The broadcasts of the king and queen were a signal example of close sympathy and understanding with their people. The king's radio talks gradually grew in strength and authority, and the queen from the first proved an excellent broadcaster. The regular Christmas broadcasts by the king followed the familiar, family-circle pattern at which his father excelled. The first included a happy quotation ("Put your hand in the Hand of God") which was much discussed. The broadcast of Christmas 1942 announced the worst danger passed. Of his special broadcasts, that of Sept. 9, 1939 ("Stand firm and calm") made a deep impression. His Empire day, 1940, talk confirmed his own confidence and his people's. Of the queen's broadcasts, those to the women of France and of the empire perhaps best revealed her deep sympathy and comprehension.

The king's visits to his land fronts were of necessity rather more curtailed than his father's; but his visits to the North African front in June 1943, and to Italy in July-August 1944 were certainly more important and onerous and entailed greater risks. His visits to theatres of operation included the following: home fleet (Oct. 5-8, 1939); France (Dec. 4-10, 1939); home fleet (Aug. 9-11, 1941); home fleet (June 6-8, 1942); home fleet (March 18-21, 1943); North Africa (June 12-24, 1943); home fleet (Aug. 13-15, 1943); home fleet (May 10-13, 1944); Italy (July 22-Aug. 3, 1944); home fleet (Sept. 28, 1945).

When World War II ended the king and queen and princesses received from the crowds the same heartfelt ovations which had been accorded to King George V and to Queen Mary.

The death on war service of the duke of Kent and the appointment of the duke of Gloucester to Australia had left the king very much alone to cope with the heavy strain of ceremonial. After World War II Princess Elizabeth began at once to take a full share in such duties as could fall on a princess. The royal family lived more and more in the public view, the head and inspiration of the nation's family life.

The king's routine of duties included his ceaseless preoccupation with state affairs, his consultations with his ministers, ambassadors, service chiefs, his contacts with foreign representatives, his daily handling of state business On Sept. 24, 1946, he travelled from Balmoral to open and to broadcast on the "Britain can make it" exhibition.

King George became soundly versed in affairs of state with a continuous experience exceeding that of his ministers. With his mother's natural quickness of mind, he became known for his ability to put his finger on the vital issue, and he took infinite pains to acquire a real comprehension of the more difficult points in social, economic and political questions. He had acquired all his father's straightness, sense of duty and loyalty to his personal staff, and the same complete impartiality in his dealings with his governments.

(J. F. Ge.)

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George (1892-1942), U.S. army air officer, was born Sept. 14, 1892, in New York city. A lieutenant in the air corps during World War I, he won the distinguished service cross for downing five German planes. He sailed for duty in the Pacific in April 1941. After Pearl Harbor, he was promoted to brigadier general and was assigned to Gen. MacArthur's forces in the Philippines, where he commanded the U.S. air force during the Japanese invasion. Gen. George was an outstanding figure in the Bataan battles. He started the "bamboo fleet," a squadron of four ancient commercial planes which flew desperatelyneeded food and medicine to Bataan from the southern islands. He was expert at concealing grounded planes, and none of his planes on Bataan were ever destroyed on the ground. Gen. George, whose death in a plane accident was reported on April 30, 1942, was posthumously awarded the distinguished service medal.

George, Harold Lee

), U.S. army officer, was born July George (1895-19, 1895, in Somerville, Mass. Educated at George Washington university and at the National university of Washington, he was appointed secretary to the U.S. comptroller of currency in 1917. He soon left this post to join the army and was commissioned a 2nd lieutenant in the air force the same year. Remaining in the army after the war, he was closely associated with Gen. "Billy" Mitchell, the prophet of air power. When Gen. Mitchell was given the opportunity to demonstrate the value of aerial bombardment in 1921, George participated in the experimental raid. He also served as a defense witness for Mitchell when the general was tried for insubordination. George engaged in experimental work in developing aerial armament and bombs at the Aberdeen proving grounds from 1921-25, and was head of the bombardment section in the office of the chief of the air corps during the following four years. In 1940 he became commanding officer of the 2nd bombardment squadron, the first organization to be equipped with four-engined Flying Fortresses. The following year, he was named assistant chief of air staff for war plans, and in March 1942 became the commanding general of the air ferrying command, later known as the Air Transport command. George was promoted to the rank of lieutenant general on April 12, 1945.

George, Walter Franklin

George (1878-), U.S. legislator, born Jan. 29, 1878, at Preston, Ga., began the practice of law in 1901 at Vienna, Ga., after graduating from Mercer university, Macon, Ga. In 1907 he became solicitor general for a

state judicial circuit and by 1917 had advanced to the bench of the supreme court of Georgia. He became U.S. senator in 1922 and was re-elected for six consecutive terms, withstanding Pres. Roosevelt's attempt to "purge" him in the senatorial election of 1938. George was a member of the conservative southern bloc, opposing antilynching, wage-hour, government spending and price control acts and, in Jan. 1946, leading the filibuster against the Fair Employment Practices act. He was chairman of the senate foreign relations committee from Nov. 1940 until Aug. 1941, when he became chairman of the senate finance committee.

Georgia

A southern state, one of the original states of the union, Georgia was fourth to ratify the constitution; popularly known as the "Empire State of the South." Area 58,876 sq.mi. (including 358 sq.mi. of inland water); pop. (1940) 3,123,723; urban 1,073,808 (34.4%): rural 2,049,915 (65.6%); native white 2,026,362; Negro 1,084,927; foreignborn white 11,916; other races 518. Capital, Atlanta (302,288); the next largest cities are Savannah (95,996); Augusta (65,919); Macon (57,865). The population of the state was est. at 3,223,727 on July 1, 1944.

In Nov. 1936 E. D. Rivers had been elected governor on a program of support for the New Deal. In June 1937, 26 amendments were adopted by a vote of the people, the most important concerning old-age pensions and the classification of property for tax purposes.

Rivers was renominated in the September primary of 1938. In his campaign he sought endorsement for what he had done during his two-year term and an opportunity to complete his program. Under the county unit system of voting, Rivers received 282 votes as against 128 votes for his two opponents. In the November elections of 1938 the Democratic ticket was unopposed and the following state officers were elected in addition to Rivers: John B. Wilson, secretary of state; M. J. Yeomans, attorney general; George B. Hamilton, treasurer; Zach Arnold, auditor; William B. Harrison, comptroller; M. D. Collins, superintendent of schools; and Columbus Roberts, commissioner of agriculture. Chief justice of the supreme court was Richard B. Russell, Sr. Senator Walter F. George won renomination with 246 unit votes, as against 148 for Eugene Talmadge and 16 for Lawrence Camp.

In the Nov. 1940 elections Eugene Talmadge was elected governor without opposition, having easily defeated his opponents for the Democratic nomination in the primary, which, in Georgia, is equivalent to election. He had served two terms as governor (1932–36), and after the constitutional interval of four years he became the second man in Georgia's history to hold that office a third term. Other successful candidates were: John B. Wilson, secretary of state; Ellis Arnall, attorney general; George B. Hamilton, treasurer; Homer C. Parker, comptroller general; M. D. Collins, superintendent of schools; Tom L. Linder, commissioner of agriculture. In the presidential election Roosevelt received 265,194 votes; Willkie 23,934; Babson (Prohibition) 983; and Thomas (Soc.) 1.

In 1941 a constitutional amendment was adopted extending the term of governor and state school superintendent from two to four years. The biennial session of the general assembly passed measures providing for reorganization of government departments; reduction in salaries of elected officials; more centralized control of state finances by the governor; and reduction in unemploy-

ment compensation tax on employers. In the gubernatorial primary of 1942, Ellis Arnall won the nomination by a popular vote of 174,198, against 127,488 for the encumbent Eugene Talmadge. Arnall's nomination was ratified in the November general election. The principal issue of the campaign was the loss of the accredited rating of Georgia's university system on the charge of political interference by Talmadge. Other state officers elected were: Homer C. Parker, comptroller general; T. Grady Head, attorney general; Richard B. Russell,

Ir., U.S. senator.

Important legislative reforms enacted by the 1943 session of the general assembly included: a reorganization of the board of regents of the university, providing for appointment of members by the governor subject to senate approval, to remove the governor from the board and to secure restoration of the university's accredited rating; the proposal as a constitutional amendment of a retirement plan for the state's 23,500 teachers; abolition of the governor's power to grant pardons and paroles and transfer of this power to a three-man commission; abolition of the system of allocating all incomes from certain taxes and fees to specific departments; requirement that expectant mothers be tested for venereal disease; provision for the election of the state auditor by the legislature.

In a special election in Aug. 1943 the following proposals by the assembly were ratified as constitutional amendments: reorganization of the board of regents; establishment of a pardon and parole board; teacher's retirement act; reduction of voting age from 21 to 18; authorization for the appointment of a commission to draft a new constitution; exemption of out-of-state subsidiaries of state corporations from ad valorem and intangible taxes; granting all war veterans uniform civil service preference. An extra session of the general assembly met Sept. 27 to Oct. 1 to enact prison reform measures. During 1944 Gov. Arnall and the state's attorney gen-

Georgia: Statistical Data Table I.—Education (Public)

					1938	1940	1941-42	1942-43	1943-44
Elementary pupils .						642,632	626,053	619,068	593,776
High school pupils .						141,880	141,880	144,156	134,681
Elementary teachers						16,822	16,822		16,415
High school teachers	٠	٠	•	٠	5,706	5,9 <i>57</i>	5,957		6,339

	Table	II.—Public	Welfare			
	(Money	figures in t	housands)			
	1938	1940	1941	1942	1944	1945
Recipients of old-age pen-						
sions	3 <i>5,77</i> 0	28,243	51,742	66.195	68,865	67.044
Cost of old-age pensions	\$313	\$226	\$431	\$586	,	,
Dependent children re-						
ceiving aid	12,313	9,799	11,788	11,529	9.806	9.987
Blind receiving aid	1,223	1,111	1,576	2.033	2,137	2,030
Workers under unemploy-	-	•	•	_,	_,	_,
ment compensation	330.585	336 700		227 000		

Table III.—Communications (Money figures in thousands of dollars)

	1938	1939	1940	1942	1943	1945
State highway mileage .	11,071	11,741	13,213	13,224	13,995	
Expenditure on highways	\$25,502	\$19,597	\$38,803	\$18,501	\$11,119	\$6,662
Railroad mileage	6,425	6,335	7,960	6,242	6,215	6,454

Table IV.-Banking and Finance

	(All money figures in tho	usands of dollars)		
	1937	1939 1941	1942 1943	1945
State revenue	\$40,396	\$69,271 \$59,973 \$38,956	\$58,894 \$58,183 \$57,076 \$55,189 50 47	\$63,194 \$58,485 48
No. of national banks		52 51 \$338,459 \$314,416	\$351,044 \$531,954	\$954,817
	Table V.—Agı	-icultur e		
	(All figures in th	ousands)		
	1937	1939 1940	1942 1944	1945
Value of crops	\$180,767	\$143,406 \$163,640	\$268,475 \$372,868	\$387,348
Leading crops (bu.)	48.334	36,941 46,849	39,160 40,802	48,678
Corn		915 1,010	860 810	665
Hay (tons)		581 648	832 710	840
Oats	8,658	8,946 8,638	10,152 13,080	15,000
Peaches	2,/30	3,800 4,216	6,177 4,860	8,091
Peanuts (Ib.)	392,200	341,250 553,605	675,000 693,900 31,200	704,700 36,850
Pecans (ib.)	8,400	8,700 8,526	8,272	8,010
Potatoes, sweet	8,550 	8,892 6,930 95,986 76,420	59,860 95,540	108,035
	Table VIIMinera	l Production		
	(All figures in thousar			
		938 1939 194	0 1941 1942	1944
	*** ***	1,598 \$14,633 \$16,9	• • • • • • • • • • • • • • • • • • • •	
Total value of products		5,320 6,537 7,4		6,954
Clay		3,581 4,839 5,0		

Table VI.---Manufacturing (Money figures in thousands of dollars)

							1935	1937	1939
Wage earners . Wages paid Value of products							\$ 81,495	\$110,501	\$108,083

eral instituted a case against 20 railroads, charging them with freight rate discrimination against the state of Georgia. The governor also appointed a committee on constitutional changes to prepare a new state constitution which would be submitted to the legislature in 1945. In the November elections Roosevelt received 268,187 votes and Dewey received 56,506.

The principal achievement of the general assembly's 1945 session was the drafting of a new state constitution. Provisions of the new constitution, which was ratified by the people on Aug. 7, included repeal of the poll tax; establishment of the office of lieutenant governor; allocation of all state revenues to the general treasury from which expenditures would be made under budgetary control; establishment of constitutional status to the public service commission and the state board of correction; authorization for towns and cities to issue certificates of indebtedness to acquire power plants.

Candidates for governor in the Democratic primary on July 17, 1946, were Eugene Talmadge (governor, 1933-37; 1941-43), Eurith Dickinson Rivers (governor, 1937-41), James Vinson Carmichael and Hoke O'Kelley. Talmadge campaigned upon a platform of white supremacy. The vote, largest ever cast in Georgia, gave a county unit tally (decisive in Georgia) as follows: Talmadge 242; Carmichael 148; Rivers 20. The popular vote for Carmichael was 314,421, for Talmadge 305,777 and for Rivers 69,750.

Talmadge died on Dec. 21, 1946. The Georgia constitution was not clear on the question of succession in this case, so the year 1946 closed with the people uncertain whether the governor would be Melvin E. Thompson (lieutenant governor-elect), Herman Talmadge (son of Eugene, campaigning for election by the general assembly) or Arnall.

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Georgian S.S.R.

See Union of Soviet Socialist Republics.

Georgia Warm Springs Foundation

The Georgia Warm Springs foundation, established in 1927 by Franklin D. Roosevelt, was transformed during the decade 1937–46 from a convalescent home for victims of infantile paralysis (q.v.), specializing in hydrotherapy, into a complete orthopedic hospital and an educational and research centre devoted to the after-effects of poliomyelitis.

It also became, after the death of its founder and the dedication of the "Little White House," a national shrine.

In 1937 the foundation received a large share of the funds raised in the United States each January through the celebration of the president's birthday. But in 1938 the National Foundation for Infantile Paralysis was formed, with local chapters in almost all counties of the country. After that time the Georgia institution's expansion was supported by grants totalling more than \$1,500,000 from the National foundation, and in addition, the cost of treatment of a large number of its patients was met by National foundation chapters.

Before 1939 the institution was known chiefly for its pool treatment. All surgery was performed in Atlanta hospitals. But with the opening of the new medical building and the development of other methods of treatment, its horizons broadened. The foundation became a centre for orthopedic reconstruction and began accepting patients for acute and early care. In 1941 a Post Graduate Physical Therapy school was established, and short courses for medical experts were given.

Hospital bed capacity, formerly 110, was almost doubled in 1946, when additional facilities provided 200 beds. From 1937 through 1946, 3,575 patients were treated; 656 professional men and women were given special training. In 1941 Pres. Roosevelt wrote:

In my opinion, it would be a mistake to think of the Foundation as just a hospital. It is all of that and more. . . . The Foundation has unquestionably done much good for individual cases, but it has been working to the end that it might also be able to discover something of value for those thousands of cases which, of course, it cannot care for. Its very existence . . . has aroused to an unbelievable extent . . . a public recognition of the havoc caused by this disease and the necessity for making every effort to bring it under control. (Georgia Warm Springs Foundation Report, 1941.)

(B. O'C.)

Gerbrandy, Pieter Sjoerds

), Netherlands jurist and states-Gerbrandy (1885man, was born April 13, 1885, in Goenga, Friesland. He was educated at the Amsterdam Free university and was admitted to the bar in 1911. A member of the Friesland provincial government from 1919 to 1930, he was professor of commercial law and international private law at the Amsterdam Free university from 1930 to 1939. In the latter year, he became justice minister; in 1940, following the German invasion, he fled with the royal family and the government staff to London, where he was prime minister of the Netherlands government-in-exile from 1940 to 1945. On Oct. 7, 1944, Prime Minister Gerbrandy described the German inundations of the Netherlands as a calamity that would result in starvation for many thousands of his countrymen. He visited the liberated portion of the Netherlands in Nov. 1944.

Gerbrandy and his government resigned May 16, 1945, in fulfilment of a pledge made earlier that the exiled regime would resign as soon as the liberation of the

Netherlands was completed.

Gerlier, Pierre

Cardinal Gerlier (1880—), archbishop of Lyon and primate of France, was born June 14, 1880, in Versailles. After studying law in Normandy and at Bordeaux and practising at the bar of Paris, he entered a Catholic seminary. His ecclesiastic studies interrupted by World War I, he spent most of the period of the war as a prisoner in Germany. Returning to Paris, he resumed his studies and was ordained a priest in 1921. He was appointed bishop of Tarbes and Lourdes in 1929. In Oct. 1937 Pope Pius XI elevated him to the archbishopric of Lyon, and proclaimed him a cardinal the following December.

After the defeat of France in 1940, Cardinal Gerlier predicted his nation's recovery and approved the reconstruction program of Pétain's Vichy government. But in Aug. 1942, with the announcement of the policy of discrimination against the Jews, the cardinal became openly hostile to the Vichy regime. He protested to Pétain against the persecutions, and instructed his priests to protect their neighbouring Jews when the police appeared. He also publicly opposed the practice of forced labour, and banned funeral rites for French legion members fighting with the Germans on the eastern front.

German-American Bund

See NATIONAL SOCIALISM.

German Literature

The more victories Adolf Hitler won in World War II. and the more firmly he closed his borders, the harder became the task of German authors inside as well as outside the country to warn the German people of naziism. Those who left the country had freedom but little influence; those who stayed had enormous influence, but almost all of them succumbed either to propaganda or to fear.

German literature during the decade 1937-46 can, therefore, be divided into nazi and non-nazi literature, but this division is not a very rigid one, as there were many authors who vacillated more or less between the two camps. In this article, therefore, German authors are classified according to whether or not they lived and wrote in Germany.

Inside Germany.—Most of the books published in Germany during the decade, 1937-46, scarcely deserved mention, and many of them had disappeared altogether by the end of 1946. Hans Heinz Ewers was perhaps the best known of the purely nazi writers; as early as 1932 he had written a book glorifying Horst Wessel. Dietrich Eckart, Hans Johst (the latter president of the Association of German Writers) and Richard Euringer were also prominent. The writings of Hans Friedrich Blunck were published widely; they included Die Nordische Welt-Geschichte, Wesen und Bedeutung der Nordischen Völker (1937) and Frauen im Garten (1939). The giant printings of these works pointed not only to support of the nazi party but to the mental attitude of the readers.

Much more dangerous were the two Juengers, brothers or cousins; they were able to disguise their naziism in expressions of mysticism, which increased the enthusiasm of the German public for their works. The younger, Friedrich Georg Juenger, seems to have tried to shed the nazi influence in *Der Krieg* (1936), *Griechische Götter* (1943) and *Die Titanen* (1944). But Ernst Juenger was much

better known and more influential; he early learned how to veil his definite nazi convictions in double meanings and obscure comparisons. Thus the governing nazis did not interfere with his work, and non-nazi readers in their turn found it acceptable. Among his works were Afrikanische Spiele (1936) and Auf den Marmor-Klippen (1939-40); in the latter, he celebrated in the symbolic figure of the protagonist, a forester, all that went on in Germany at the time; when asked to explain the symbolism of the book, he gave dubious answers. He used similar techniques in Blätter und Steine (1942) and Gärten und Strassen (1942). Immediately after the defeat of Germany, in an illegally-circulated pamphlet called Der Friede, he haughtily protested his innocence and accused the English and French of equal complicity with the Germans in the crimes of war.

In Germany, Catholics were generally more prominent opponents to the nazi regime than were Protestants. Reinhold Schneider took refuge in historical comparisons, especially in his Las Casas vor Carl V (1938) wherein he confronted the famous friend of the Indians and opponent of slavery with another Dominican friar, "who apparently esteemed the State more highly than he did eternal justice," a phrase which could not fail to be understood by many of his readers. His poems circulated in the form of handbills in 1943 and were published in Switzerland in 1945 under the title of Die Letzten Tage at a time when Schneider was ill in a hospital. His death was reported later.

Among "converted" authors, Werner Bergengruen was noteworthy. His novel, Am Himmel und auf Erden, an enormous success in 1940, described an elector of Brandenburg whose astrological calculations led him to expect the end of the world; German readers applied this prophecy to their own age. In Der Tod von Reval (1939) and Der Spanische Rosenstock (1941), he still seemed something of a nazi. Later developments apparently influenced him deeply; in 1945 he published a volume of poems, Dies Irae, in which he vividly expressed the German feeling of remorse.

Ricarda Huch, superior in genius to all Germanresident authors mentioned here, was definitely never a nazi, but she glorified Germany's national interests at all times and did not oppose naziism in her books, Das Zeitalter der Glaubens-Spaltung (1937) and Weisse Nächte (1943). A year after the German defeat she spoke in favour of humanistic ideals in her work, Urphänomene.

Ernst Wiechert was no doubt the most courageous writer, though his talents were inferior to those of Ricarda Huch. In 1935 he delivered a speech at the University of Munich which brought him into disrepute with the rulers of Germany, but he wrote so cautiously that his novels, Atli, Tobias (1938) and Das Einfache Leben (1939), were not banned by the nazis. After Germany's defeat he fully identified himself with the guilt of the German people in his Rede an die Deutsche Jugend (1945). In 1946 he published Märchen and Der Totenwald, the latter a report of his stay in Buchenwald, where he was imprisoned for a short time in 1937 under much better conditions than those suffered by later prisoners.

Gerhart Hauptmann, one of the great German authors of the 20th century, evidenced a serious break with those convictions according to which, as an opponent of the kaiser, he had reigned as poet of the republic for more than a decade. Yet he crossed over into the camp of the nazis immediately after Hitler's entry into power. Pri-

vately, he attributed this change to concern for the fate of his son; nevertheless, he regretted the step. He soon withdrew, and by 1946, at nearly 80 years of age, returned to his earlier forms with two dramas of the classic cycle, Iphigenia in Aulis and Agamemnon's Death.

Emigrés.—Among those who left Germany, the writers who had been known to the world long before Hitler took their stand as anti-nazis or at least did not support naziism. Dozens of them, Jews as well as Christians, remained militant journalists and thus did not necessarily enrich German literature. Some new names arose in serious literature during the period of emigration, among them Anna Seghers, who wrote in Paris and depicted a strike of mineworkers in her novel Die Rettung. Others included Juan Gebser, half Austrian, living first in Spain and later in Switzerland, who wrote volumes of poetry, Winter-Gedicht and Ariadne-Gedicht (1945), and Max Herrmann-Neisse, with two volumes of poetry, Um uns die Fremde (1936) and Erinnerung und Exil (1946).

Most talented of the new group was Arthur Koestler, Hungarian-born German, a former journalist who not only followed a strict anti-nazi but also an anti-communist line. His Spanish Testament, written in prison in 1937, enjoyed wide popularity; it was followed by The Gladiators (1940), Darkness at Noon (1941), Arrival and Departure (1943) and Thieves in the Night (1946).

Most of the writers well known in Germany before World War II continued to work without concerning themselves too greatly with the problems of the time.

Erich Maria Remarque had been maligned in Germany even before Hitler, as he had been an antimilitarist all his life. In two brilliant books, Three Comrades (1937) and Love Thy Neighbor (1941), he continued to write along these lines and appeared as a fighter for freedom in Arch of Triumph (1946). Else Lasker-Schueler (1876–1944) also carried on her earlier themes, mostly in Palestine itself, in her Das Hebräer-Land (1937) and Neue Gedichte (1943).

Thomas Mann added two more volumes to his Joseph cycle, Joseph in Egypt (1938) and Joseph the Provider (1944). In addition he wrote The Transposed Heads (1941) and The Law (1944); in 1940 he published a parody of Goethe in his old age, Lotte in Weimar.

Stefan Zweig, a Jew, always opposed to militarism and every use of force, was obliged to emigrate very early. His suicide in 1942 was only indirectly connected with the nazis. Having considered himself a European all his life, he stated in his testament that he died because he had no home. German literature lost one of its great men with his death. He wrote Begegnungen mit Menschen, Büchern, Städten (1937); Conqueror of the Seas (1938); Beware of Pity (1939); Brazil, Land of the Future (1941); Royal Game (1944); and an unfinished work on Balzac (1946).

Lion Feuchtwanger, who fought the nazis from the stage for the first few years, later occupied himself with the communist and Jewish problems of his earlier novels and left the German question in the background. He wrote Moscow, 1937 (1937), False Nero (1937), Paris Gazette (1940). The Devil in France (1941), Double, Double, Toil and Trouble (1943) and Simone (1944).

Franz Werfel (1890–1945), one of the greatest geniuses among German authors of the 20th century, likewise was fully opposed to force and the nazis. A Jew, he lived as a believing Catholic and did not enter the struggle directly. He wrote In einer Nacht, a play (1937); Harken Unto the Voice, a novel (1937); Embezzled Heaven (1940) and The Song of Bernadette (1942). He defended per-

secuted Jews without reserve in his comedy, *Jacobowsky* and the Colonel, written in collaboration with S. N. Behrman (1944).

Bruno Frank (1887–1945), though he described the life of an emigrant in Closed Frontiers (1937), did not concern himself with the struggle directly. The novels of Carl Zukmayer, The Moon in the South (1937), A Summer in Austria (1937), Herr über Leben und Tod (1938), Second Wind (1940) and The Last Drop (1941) were also devoted to more timeless problems. Alfred Doeblin published Men Without Mercy (1937) and Das Land ohne Tod (two volumes, 1937–38) and Bürger und Soldaten (1939). Alfred Neumann wrote Man of December (1937), Die Goldquelle (1938), The Friends of the People (1941), The Fates (1944), as well as Six of Them (1945), in which he described the student demonstrations at Munich in 1943, using fictitious characters as the conspirators.

Heinrich Mann, whose magnificent book about the Germans, Der Untertan, was written in 1914 but not published in English until 1943, edited the classic collection Der Hass, in which he allowed the greatest German and foreign authors to speak critically about Germany, and at that, in Switzerland where such things were frowned upon at the time; he evidenced similar sentiments in Lidice.

Arnold Zweig wrote in like vein in Palestine: Insulted and Exiled (1937), The Crowning of a King (1938), Caliban, and Spielzeug der Zeit. Emil Ludwig, in his The Germans (1941), traced the martial spirit of the German people and their traditional nazi-type ideologies through 500 years. He also wrote Stalin (1942), Beethoven, Life of a Conqueror (1943), The Mediterranean, a sort of history of Europe up through the age of Columbus (1942) and Der Entzauberte Freud (1945).

Berthold Brecht published plays, Der gute Mensch von Sezuan (1942), Galilei (1942) and the books Furcht und Elend des Dritten Reiches and Die Mutter, Geschichten aus der Revolution. Friedrich Wilhelm Foerster continued to hold a unique position as essayist and educator.

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Germany

A country under Allied military government after World War II, Germany extends from the Alps to the North and Baltic seas, and lies mainly between the Rhine and Oder rivers. Capital, Berlin (q.v.). Chief cities (1939 census): Berlin (4,332,242); Hamburg (1,692,695); Munich (828,355); Cologne (768,426); Leipzig (701,606); Essen (659,871); Dresden (625,174); Frankfurt-on-Main (546,649); Duesseldorf (539,905). There were 111 cities with a population of more than 50,000 each. The population of all these cities was somewhat reduced from the 1939 figure as a result of World War II. Religion (1933): Protestants 62.7%; Roman Catholics 32.5%; Jews 0.7%; others 4.1%.

The area of Germany at the end of 1946 was provisionally 143,243 sq.mi., with an approximate population, according to the preliminary figures of the Allied census of Oct. 29, 1946, of 66,000,000, distributed in the Allied military zones as follows: U.S. 16,600,000 (not including the Bremen enclave); British 22,600,000; Russian, 17,800,000; French 5,900,000; Berlin joint-control area 3,100,000. These figures did not include the 1,425,000 military and civilian forces of the Allied occupying governments (U.S. 290,000; British 350,000; Russian 725,000; French 60,000). According to the census of May 17, 1939, the area of the old German reich, not including Hitler's annexations of 1938 and the following years, was 182,471 sq.mi., with a population of 69,622,483.



Foreign Minister Joachim von Ribbentrop informing foreign correspondents in Berlin on April 9, 1940, that the invasion of Norway on that day was a means of protecting that country from occupation by Great Britain and France

General Scope of Hitler's Conquests.—As a result of Hitler's annexations of territory in 1938 and 1939, the population of the "greater reich," according to the census of May 17, 1939, was approximately 86,170,000 if the "protectorate" of Bohemia-Moravia was included. This greater reich was created by Hitler's annexation of the following territories: Jan. 13, 1935, Saarland, 864,000; March 13, 1938, Austria, 7,008,000; Oct. 1, 1938, Sudetenland, 2,945,000; March 15, 1939, Bohemia-Moravia, 6,805,000; March 22, 1939, Memel territory, 153,000.

After the campaign against Poland in Sept. 1939, Hitler added to the "greater reich" the populations of Danzig, the Polish Corridor, Posen and a strip of territory east of Silesia, regions which aggregated 36,242 sq.mi., with a population of 10,000,000. The Poles, as far as possible, were exterminated or removed from these conquered districts, and their places were taken by Germans from the reich or by tens of thousands of Germans "repatriated" from their old homes in Estonia, Latvia and Lithuania. Hitler also conquered more than half of the rest of Poland; its population of about 15,000,000 was organized under a national socialist administrator, Dr. Hans Frank, as the "general government" of Poland. Poles, if loyal to their conquerors, were allowed to hold subordinate official positions. Half a million Jews were herded into a walled ghetto in Warsaw. During the war, nearly 5,000,000 Jews were exterminated by cold and by starvation and in inhuman "death factories."

The reich also controlled more or less completely the governments of the populations conquered in the spring and summer of 1940: Denmark (3,777,000), Norway (2,900,000), Netherlands (8,640,000), Belgium (8,386,000), Luxem-

bourg (300,000), and the northern three-fifths of France known as "occupied France" (117,000 sq.mi. with an estimated population of 27,800,000). The remaining two-fifths of France, known as "unoccupied France," and the French colonial empire were left under the Vichy government of Marshal Pétain. Some 70,000 French families were suddenly expelled from Lorraine to unoccupied France, and Lorraine ceased to exist. On Nov. 30, 1940, it was incorporated directly into the "third reich" and combined with the Saar territory under Gauleiter (District Leader) Joseph Buerckel as the "Westmark." Alsace, from which French familiës were also expelled in large numbers, was placed under the administration of Robert Wagner, Gauleiter of Baden.

In addition, by the infiltration of German troops and secret agents, Germany gradually acquired domination over Hungary, Rumania and Bulgaria in the winter of 1940–41. In April, 1941, a blitzkneg against Yugoslavia (15,000,000) and Greece (7,000,000) destroyed the independence of these countries and brought their territories directly or indirectly under German control. Finally, attacking the U.S.S.R. June 22, 1941, Hitler's armies advanced within five months almost to Moscow and reached a line running from Leningrad in the north to the eastern part of the Sea of Azov in the south. But in late November and December of 1941 a strong Russian counteroffensive began to push the German armies back on the Moscow front.

Postwar Territory and Population.-After Germany's unconditional surrender, in accordance with the Yalta agreements of Feb. 1945 and the Allied Potsdam declaration of Aug. 2, 1945, Germany was deprived not only of all Hitler's annexations and conquests, but also provisionally of all former German reich territory east of the Oder and western Neisse rivers. Of this territory east of the Oder, the northern half of East Prussia, including Koenigsberg, was transferred to the soviet union; the rest of East Prussia, together with most of Silesia and Pomerania, a part of Brandenburg and Stettin were placed under Polish administration. Theoretically this disposal of German territories east of the Oder was only provisional; the final settlement of them was to be decided when the Allies made peace with Germany. But in the meantime Russia and Poland treated the territories as if they were definitely to belong to themselves. Germans were expelled and their lands and property handed over to Russians and Poles, thus tending to present the ultimate peace conference with a fait accompli. However, the U.S. secnetary of state, James F. Byrnes, in his speech at Stuttgart on Sept. 6, 1946, energetically reminded the Allies that the German territories were placed under Polish administration only provisionally and that "the extent of the area to be ceded to Poland must be determined when the final [peace] settlement is agreed upon." The German territory east of the Oder transferred to Russia and provisionally to Poland contained about 40,000 sq.mi. and had a population in 1939 of 9,300,000, i.e., nearly a quarter of the area and about one-seventh of the population of the old reich. A large part of the men of working age in this area were taken by the Russian armies to perform labour services in the soviet union. During 1945-46 what was left of this German east-of-the-Oder population-mainly women, old men and children-was uprooted and deported in large numbers to the truncated reich west of the Oder. Secretary Byrnes in his Stuttgart speech stated that he was willing that the Saar territory (738 sq.mi., pop.

770,000, almost wholly German) should be integrated with

In 1945-46 there were deported into Germany west of the Oder more than 3,000,000 German-speaking persons who had lived for generations in Danzig, the Polish Corridor, Czechoslovakia and Hungary, or who had been transplanted by Hitler during the war from the Baltic provinces or the Austrian Tyrol and given new homes in the nazi-conquered lands. These homeless, hungry, destitute deportees thrust into Germany greatly increased the difficulties of the armies of occupation, aggravated the unemployment problem, and were a heavy burden on the German people who were made responsible for their support.

At the time of Germany's defeat, in May 1945, there were also 8,600,000 foreign "slave labourers" in Germany -6,400,000 civilian workers and 2,200,000 working prisoners of war. They had been imported into Germany by Hitler from nazi-conquered lands to labour in the fields and factories in the place of Germans who were conscripted into the nazi fighting forces. These "displaced persons" were at once liberated by the Allies and repatriated as fast as inadequate transportation and other difficulties allowed. By the autumn of 1946 there were only about 700,000 remaining to be repatriated; these consisted mainly of Poles, Baltic Germans and some Russians, who hated the bolshevists and violently resisted repatriation which would again have subjected them to soviet domination. (See also DISPLACED PERSONS.)

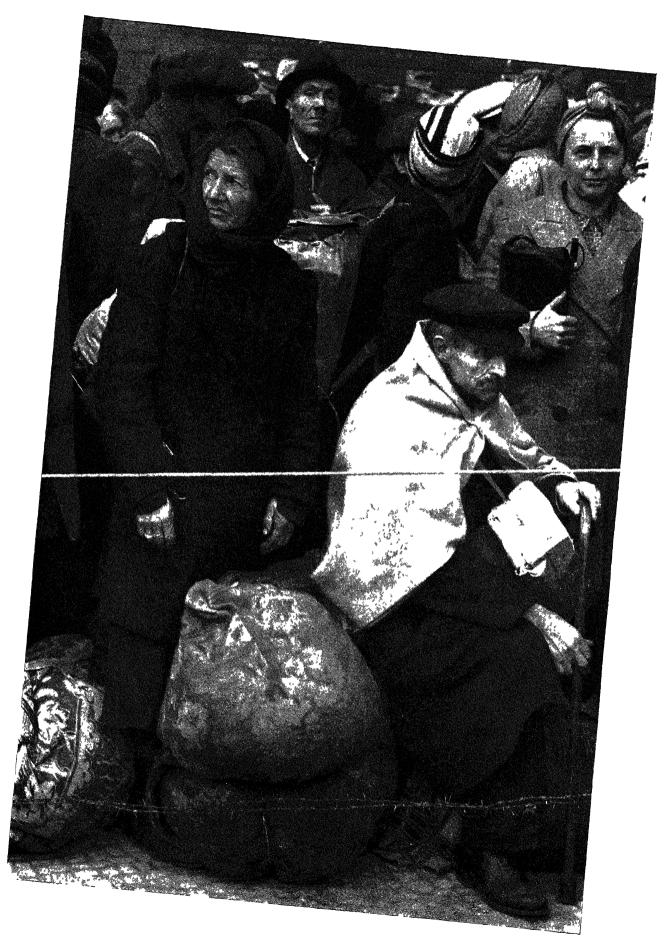
The number of Germans in the armed forces who were killed or permanently disappeared and lost during the war may be conservatively estimated at 4,000,000. In addition, more than 300,000 civilians were killed in air raids. More than 2,000,000 German prisoners of war were detained on transferred abroad to perform labour services in France, Russia and elsewhere. All German war prisoners in the United States were returned to Germany by the autumn of 1946.

The increased civilian death rate during the war years, because of war privations, disease, suicide, death in concentration camps and purges by the nazi police was in part offset by the nazi efforts to stimulate the birth rate.

Reich chancellor and fuehrer of Germany was Adolf Hitler from Jan. 30, 1933, to April 30, 1945; chancellor from April 30 to May 23, 1945, was Admiral Karl Doenitz; thereafter Germany was administered by the four principal Allies.

The Prelude to War.—The most important development in Germany during 1937–39 was the very rapid increase in the country's armed forces. The military limitations imposed on Germany by the Versailles Treaty were openly swept away by Hitler on March 15, 1935, when he decreed that the German army henceforth was to be based on the principle of universal short-term military service instead of being, as fixed by the treaty, a small, professional, long-time service army of 100,000. This decree at once raised the army to 500,000 and to more than twice that number, not including trained reserves and semi-military formations, by 1939.

The Versailles clauses limiting the German navy to six 10,000-ton battleships and forbidding all submarines was scrapped by the Anglo-German agreement of June 18, 1935, by which Hitler was allowed to have a total naval tonnage, including submarines, up to 35% of the royal navy. This meant that Germany might have naval vessels totalling 420,000 tons. In the autumn of 1936 she launched the "Scharnhorst" and the "Gneisenau," 26,000-ton bat-



tleships named after the two men who had helped build up the military forces by which Germany had liberated itself from Napoleon's domination. It was also building two mighty battleships of 35,000 tons or more which were later to achieve fame in World War II as the "Bismarck" and the "Tirpitz." In addition, many other types of vessels and a large fleet of submarines were rapidly constructed.

Army aircraft, absolutely forbidden by the Versailles treaty, were being secretly built by Hermann Goering soon after 1933 and numbered several thousand planes by 1939. Much of this new military and air equipment was tested out in Spain in the civil war which began there in 1936. In Sept. 1939, Hitler stated that he had spent 90,000,000,000 marks (about \$36,000,000,000) on German rearmament.

Besides these regular armed forces there were three semimilitary police formations which were reorganized early in 1937. A more complete separation was made between the "SA" (Sturmabteilungen) or Brown Shirts and the "SS" (Schutzstaffel) or Black Shirts. Both were agencies of the nazi party rather than of the German state. The Brown Shirts, formed first, were the famous ruffians who organized street fights with the Communists, guarded Hitler's early political meetings and aided him in building up the nazi party and in seizing power in 1933. They were weakened after the blood purge of June 30, 1934, when their leader Ernst Roehm and many of his associates were shot at Hitler's orders.

The Black Shirts or Elite Guard, formed later, were at first a special bodyguard for Hitler but rapidly grew in numbers until they eventually counted nearly 500,000 members. They were the most carefully selected and the most rigidly trained of all the police formations, and in 1937 were placed under the control of Heinrich Himmler as commander of the German police. They prided themselves on being the advance guard of national socialist philosophy in its most radical and uncompromising form. They were often at odds with the regular army (Wehrmacht) under the command of old Prussian generals, many of whom had a great dislike of and contempt for Hitler and Himmler.

Finally, there was the Secret Political Police or Gestapo (Geheime Staatspolizei). Its task was to ferret out and ruthlessly crush all tendencies endangering the safety of the nazi regime. Measures taken by the police were subject only to its own control and judgment, and were not subject to the jurisdiction of the administrative courts. As head of these police formations Himmler became, next to Hitler himself, the most powerful and the most feared man in the reich.

Four-Year Plan.—One of the most important agencies for increasing armaments between 1937 and 1942 was the Four-Year plan announced by Hitler at the Nuernberg party rally in Sept. 1936. It aimed to realize the slogan "guns instead of butter." Its execution was entrusted to Hermann Goering as economic dictator. He thereby was raised above Hjalmar Schacht, who had hitherto directed German economic policy. Schacht was cautious and conservative and not a member of the nazi party until Hitler conferred membership on him in 1937. Goering, on the other hand, was known as a man of great driving power and ruthless energy, devoted to building up Germany's military and economic strength, and was second only to Hitler in the party hierarchy.

The essence of the Four-Year plan was to make Ger-

many self-sufficient in view of the possibility of war and of the more or less economic isolation in which it found itself. Imports were even more rigidly restricted to those things which were absolutely necessary, or which could not possibly be produced in Germany, or for which substitutes could not be found. Such raw materials as were imported were very carefully allotted to industries in accordance with a "scale of urgency." This urgency was determined by the needs of the army, navy and air forces; by the necessities of house-building for the masses and the final ending of unemployment; and by the preferential treatment of those industries which were able to manufacture successfully for the foreign export trade. By propaganda and compulsion German consumption was turned from products which required importation from abroad to those which Germany could produce at home-from beef, lamb, butter and imported fruits and vegetables to pork, poultry, fish, cabbage, turnips and carrots. In industry, manufacturers were told to use less copper and chromium, and instead, if necessary, more aluminum. Agricultural production was intensified in order to make the counetry produce virtually all the food it needed. Tracts of moorland were reclaimed by the labour service army. Meadow land was turned over to raising wheat and rye. More silos were built for providing fodder for cattle which would eat and chew their cud day and night throughout the year in barns instead of grazing in the fields. German chemists devised substitutes for raw materials formerly imported. Gasoline production from coal was stepped up, and artificial rubber took the place of the imported natural product. As a result of these measures Germany improved its position for waging war, but the German consumer had to pay higher prices for goods of inferior quality or even go without them altogether.

This prewar preparation suffered, however, from excessive bureaucratic control, party interference and favouritism, red-tape, and the selfish aims of big business. By 1942 it was clear that these methods were not producing armaments in Germany as efficiently as they were being produced in the United States and in Russia by the quick improvisations of trained experts. Therefore, economic control was taken away from Goering, who had slumped in efficiency and lost favour with Hitler. A new economic system, "autonomy of industry," was instituted by Hitler's favourite architect, Dr. Albert Speer. He swept away the

"Inferior Decoration." An English cartoonist's concept in the Daily Dispatch (Manchester), of paperhanger Hitler's "new order" for Europe in 1941



bureaucratic and party red-tape and placed power and responsibility in the hands of carefully selected engineering or business experts inspired by his own practical efficiency and energy. As a result, Germany's armaments and even consumer goods again increased until they were very seriously cut down by the growing intensity of Allied bombing in 1943–45.

Anschluss.—For nearly nine centuries Germany and Austria had been united, first in the Holy Roman empire, and then in the German confederation from 1815 to 1866. Bismarck expelled Austria from the confederation in order to make a more closely united reich under Prussian leadership. The Versailles treaty forbade any reunion of Germany and Austria, but after 1933 Hitler schemed to bring it about. His policy was to alternate "friendly understanding" with threats of force and intrigues within Austria against the existing Austrian Republic.

On July 25, 1934, his nazis tried to seize power and assassinated the Austrian chancellor, Dr. Engelbert Dollfuss. But the nazis failed in their "putsch," partly because Mussolini rushed troops to the Brenner pass to protect Austria. Mussolini did not want Hitler for a neighbour, for fear he would try to annex the Tyrolese Germans who had been given to Italy in 1919. Two years later Hitler cajoled Dr. Kurt von Schuschnigg, who had succeeded Dollfuss as Austrian chancellor, into the friendly agreement of July 11, 1936. In this agreement Hitler "recognized the full sovereignty of Austria, including the question of National Socialism in Austria, which is to be regarded as exclusively an Austrian question, in which the German Government promises to exert no interference either directly or indirectly."

In spite of this agreement, Hitler again began to plot to seize Austria by intrigues or threats of force. He established a close friendship with Mussolini in 1937 which was emphasized by the Duce's spectacular visit to German army manoeuvres and to the Krupp munitions works in September of that year. This visit was supposed to strengthen the so-called "Rome-Berlin Axis." Japan was brought into closer relations with the two European dictators through Italy's adhesion to the German-Japanese anti-Bolshevist treaty of 1936. Early in 1938 a shake-up took place in the German army which resulted in the resignation of General Werner von Blomberg and 14 other high officers. Hitler then made General Wilhelm Keitel commander of all the armed forces. As Keitel stood directly under Hitler, this gave the fuehrer more direct contact with and control over the army.

Meanwhile in Jan. 1938, Austrian nazis under the leadership of Dr. Josef Tavs, with money from Germany, prepared a conspiracy to overthrow Schuschnigg. Austrian police, however, raided the nazi headquarters in Vienna, nipped the conspiracy in the bud, and seized incriminating documents. To prevent the disclosure of the Tavs conspiracy, Hitler put pressure on Schuschnigg to come to a "friendly understanding." The Austrian chancellor was persuaded to visit Hitler at the latter's mountain villa at Berchtesgaden on Feb. 12, 1938. He was browbeaten with threats of force until he consented, in order to prevent greater dangers to Austrian independence, to promise an amnesty to Tavs and the other conspirators. He also agreed to take some nazis into his cabinet, among them Arthur Seyss-Inquart, who became minister of the interior and thus could assume control of the Austrian police. Immediately upon his appointment he hurried to Berlin to make plans with Hitler and Himmler for the seizure of Austria. In Austria the nazi demonstrations and acts of violence became more numerous and menacing.

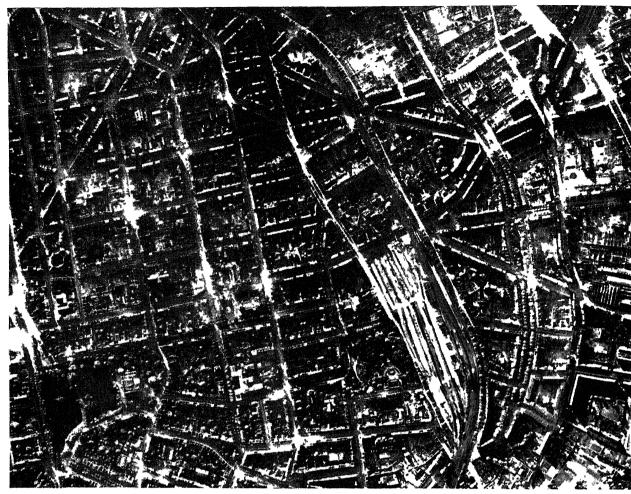
In an effort to thwart the nazi threat, Schuschnigg suddenly announced by radio that on the following Sunday, March 13, there would be a plebiscite to endorse his policy of independence for Austria. He hoped by this sudden move to prove to the world that the majority of the Austrians stood behind him, as they undoubtedly did. To prevent the plebiscite Hitler on March 11 sent an ultimatum demanding that it be postponed. The demand was emphasized by the massing of German troops and Black Shirt formations along the Austrian frontier. Armed resistance by Austria would have been hopeless. To avert bloodshed Schuschnigg finally stepped to the microphone in Vienna, and, in the middle of a concert program, declared that he had been forced to yield, adding, "God protect Austria."

Before dawn next morning German troops and police poured over the frontier at many points and aeroplanes swarmed over Vienna. On March 14 Hitler made his triumphal entry into the Austrian capital and made a speech from a balcony expressing his emotion that fate had at last enabled him to fulfill his divine mission of uniting his beloved Fatherland with the German reich.

Sudetenland and Munich.-This faithless annihilation of Austrian independence should have been a warning to the world of Hitler's duplicity and aggressive ambitions and should have led to measures to check him, but instead it led to a fatal policy of appeasement. By acquiring Austria, Hitler became master of territories on three sides of Czechoslovakia, which became the object of his next aggression. Within Czechoslovakia near the German frontiers lived some 3,500,000 Sudeten Germans. They complained that they were not given fair treatment by the Czech majority and they had undoubtedly suffered much from the general economic depression which began throughout the world in 1929. Led by a "little Hitler" named Konrad Henlein, they began to demand from the Czech government more political rights and greater economic advantages, and received secret encouragement from Hitler.

When local municipal elections took place in the Sudeten areas on May 21, 1938, there were rumours that the German army might intervene. The Czechs therefore mobilized part of their army and prepared to resist, in order not to suffer the same fate as Austria. Hitler did not move, and probably had not intended to do so at this moment. But he was very angry when the Czechs and the world gloated over the incident as a diplomatic triumph of the little democracy over the great totalitarian state. He immediately took a step which should have served as another warning of his future aggressive intentions. He ordered Dr. Fritz Todt, the able engineer who had been constructing Germany's fine new auto highways, to build on the western frontier against France a great line of fortifications which would prevent France from sending forces to protect Czechoslovakia. These fortifications, known as the "West Wall" or "Siegfried line," faced the French Maginot line, and were to give Germany protection in case Hitler became involved in war on his eastern frontiers. The fortifications were pushed forward with feverish haste. Every day 8,000 freight cars brought gigantic amounts of gravel, cement and steel for the 17,000 forts of the defense line. Nearly 500,000 men-Austrians, Germans, labour service battalions, and others—were employed. so that the West Wall was virtually completed at the time of the Munich crisis and probably contributed to the appeasement arrangements agreed to there.

During the summer Henlein and the Sudeten Germans



Skeletal ruins of Duesseldorf, photographed after the 56th R.A.F. bombing of the German industrial centre on the night of June 11, 1943

increased their demands. The British government sent a mission under Lord Runciman to try to effect some peaceful settlement. The Czechs were ready to make some concessions but these were rejected by Henlein upon Hitler's advice. The international tension rapidly mounted as Hitler prepared to address his followers at the annual party rally in Nuernberg. On Sept. 12, in an impassioned speech, he demanded the "right of self-determination" for the Sudeten Germans of Czechoslovakia, and announced that, if the latter could not defend themselves, "they would receive help" from him. This started demonstrations and riots between the Sudeten Germans and the Czechs. It seemed to indicate that a situation was being created to provide a pretext for the German army to invade Czechoslovakia to protect the "tortured and oppressed" Sudetens. As such an invasion would probably precipitate a general European war, the British prime minister, Sir Neville Chamberlain, made three flights to Germany for personal interviews with Hitler.

Convinced by Hitler's fiery language that Hitler would use force unless the Sudetens were allowed to join the reich, Chamberlain agreed in principle and accepted the proposal that the details should be worked out in a conference at Munich between Hitler, Mussolini, Edouard Daladier of France and himself. As a result of this appeasement policy, the Munich accord provided that the Czechs were to begin evacuating the Sudeten areas on Oct. 1, and German troops at once began occupying four designated zones within Czechoslovakia's strong strategic frontiers. Actually Hitler annexed much more Czech territory than

he had demanded in his first interviews with Chamberlain. Hitler then declared that he was satisfied: the Sudetenland represented his "last territorial ambitions in Europe. . . . We want peace." He praised the West Wall, denounced Winston Churchill and Anthony Eden as war-mongers, and castigated the "ever lurking threatening Jewish international world enemy which has found living expression in Bolshevism."

Anti-Semitic Outbreak.-From the time of his residence in Vienna before World War I, Hitler had been a fanatic hater of Jews and made anti-Semitism one of the chief platforms of the nazi party. After he seized power in 1933 he began a series of increasingly severe laws depriving the Jews of civil rights and economic opportunity. The worst outrage, however, prior to World War II (during which they were systematically exterminated by hundreds of thousands) occurred on the night of Nov. 10, 1938. A wave of destruction, looting and incendiarism swept over the whole reich. Bands of organized nazis set fire to all Jewish synagogues and destroyed some 500. They also toured the business streets, smashing the windows of Jewish shops and hurling furniture and goods of all sorts out onto the pavement. Thousands of Jews were roused from their beds, arrested and hustled to prison or concentration camps.

The pretext for this anti-Semitic outrage was the murder in Paris of Ernst vom Rath, a counsellor in the German embassy, by a young Polish Jew, Herschel Grynszpan, who was crazed by the news that his father and thousands of other Polish Jews were being brutally expelled from Germany. Goebbels brazenly declared that the attack on Jews was "the justifiable and understandable anger of the German people over the cowardly murder of a German diplomat in Paris." But there is no doubt that the outrage was deliberately planned and executed with the connivance of Goebbels himself, of Himmler and of other nazi radicals who wanted to whip up German fanaticism. It was also made the excuse for the imposing of a gigantic "atonement" fine of about \$400,000,000 on German Jewry as an easy means of filling the depleted nazi treasury. All Jews possessing more than 1,000 marks of property had to pay a capital levy of 20% in four quarterly instalments beginning Dec. 15, 1938.

Annexation of Bohemia-Moravia.-Despite Hitler's assertion after the Munich accord that, with the acquisition of the Sudetenland, his territorial ambitions in Europe had been satisfied, events soon proved the contrary. Within six months he resorted to the same methods against Czecho-Slovakia (as it was now designated), which had been greatly weakened by the loss at Munich of its natural strategic frontiers and defense fortifications, that he had pursued against Austria a year earlier. His press and radio denounced in violent language the "frightful maltreatment" of German minorities by the Czechs and the "intolerable" behaviour of President Eduard Benes. Even when Benes resigned in favour of the elderly Emil Hácha, in the hope of appeasing Hitler, the threats of force continued and were accompanied by intrigues for the complete dismemberment of Czechoslovakia.

In Slovakia, Hitler encouraged a movement for independence from Czech domination. Instigated by the nazis, the Slovak government at Bratislava (Pressburg) under the leadership of Premier Josef Tiso, a fascist Catholic priest, took a defiant attitude toward President Hácha in Prague. Conflicts between Czechs and Slovaks took place. On March 13, 1939, Premier Tiso flew to Berlin, conferred with Hitler and with Joachim von Ribbentrop, German minister of foreign affairs, and then flew back to Bratislava.

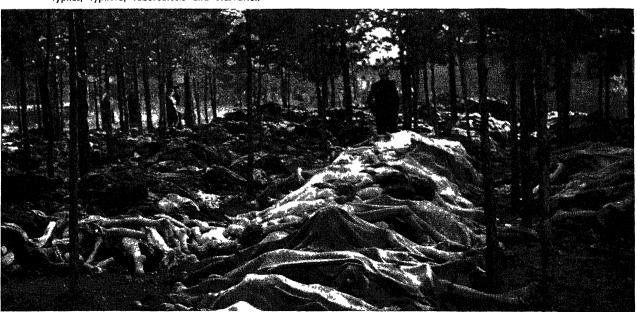
Rows of victims of Belsen concentration camp awaiting burial. Troops of the British 2nd army who liberated the camp on April 15, 1945, were reported to have found 29,000 persons dying of typhus, typhoid, tuberculosis and starvation

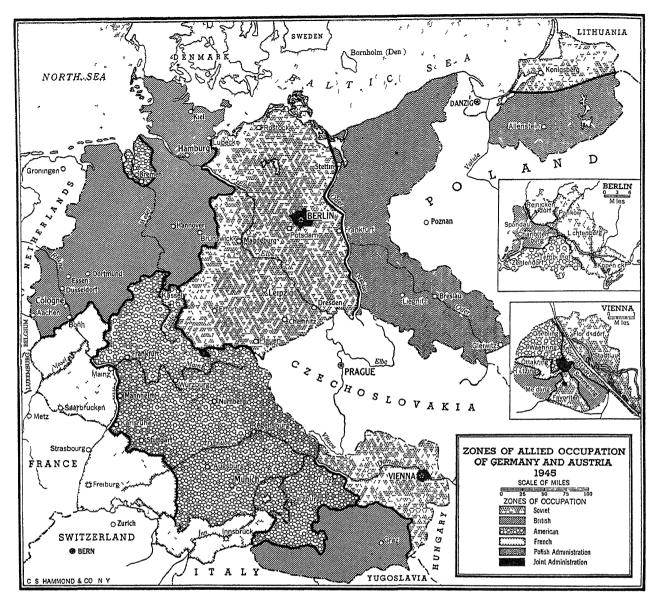
There he read to the Slovak diet, assembled in secret session, Hitler's promise to support their independence. The Slovak diet thereupon voted that Slovakia was completely independent of all Czech authority. In return, Hitler exacted from the new little puppet state the right to send German armies through it and to build German fortifications and garrisons in it along the frontier against Poland.

Meanwhile President Hácha, fearing that German troops were about to invade or bomb Czech territory, felt compelled to accept an "invitation" to see Hitler at Berlin. He arrived on Wednesday, March 15, at 1.10 A.M., and was put through a grilling interview mingled with threats from Hitler and Ribbentrop for four hours. Soon after 5 A.M. a German communiqué was issued stating that he had "trustfully laid the fate of the Czech people and the country in the hands of the Fuehrer of the German reich." Already German troops were across the frontier, marching into Bohemia on the pretext of "restoring order."

The territory thus acquired by Hitler was called the German "Protectorate of Bohemia-Moravia." It was placed under the administration of Baron Constantin von Neurath, formerly German foreign minister. Its German inhabitants, numbering less than 500,000, became German citizens with the same rights and duties as Germans in the rest of the reich. Its more than 6,000,000 Czech inhabitants were promised self-government and full opportunities for the development of their Czech culture. But these promises soon proved illusory, and Bohemia-Moravia was virtually annexed to the reich in fact if not in name. German officials and police swarmed into the country, and the Czechs were soon reduced to a kind of political and economic slavery. Thousands were removed from their homes to work in the mines and factories of the reich, and the Jews were subjected to great privations.

The seizure of Bohemia-Moravia considerably increased Hitler's military power. He took over all the Czech aeroplanes, the 40 divisions of the Czech army, and the valuable Skoda munitions works. He strengthened his eastern frontier by greatly shortening it. But he belied all his previous declarations that he wanted to add only Germans to the reich. His pretext for annexing 6,000,000 non-





German Czechs was, as he explained in his speech of April 28, that he feared Bohemia might become a landing field for Russian aeroplanes and thus be the spearhead with which communism would threaten western civilization. His act, however, had fatal consequences. It destroyed among his neighbours all remaining belief in his sincerity and honesty and put an end to appeasement policies. It crystallized the general European feeling, growing since the Munich accord, that no appeasement could satisfy him and that a "Stop Hitler" front must be formed. This took place when he made aggressive demands on Poland.

The Polish Crisis.—On March 22, 1939, a week after seizing Bohemia, Hitler annexed the Memel territory which before World War I had been a part of East Prussia and had later become part of Lithuania. At the same time he secretly renewed demands which had been privately made on Poland on Oct. 24, 1938, three weeks after the Munich accord, but which Poland had evaded answering. These demands included the return to the reich of the almost purely German population of the Free City of Danzig, and the cession by Poland of a strip of territory across the Polish Corridor to connect East Prussia with the rest of Germany. Such a strip would make possible a German railway and auto highway by which Hitler could

move troops rapidly by land into East Prussia for use against Poland or Russia, instead of having to ship them over the Baltic.

Poland, after witnessing Hitler's recent annihilation of Czechoslovakia, finally refused the demands. It naturally feared that to yield up control over Danzig and a strip across the Polish Corridor would simply increase Hitler's appetite for more territory, and would be merely the first step in an eventual further partition of Poland. Britain was informed, and on March 31, 1939, Prime Minister Chamberlain announced in the house of commons that "in the event of any action which clearly threatened Polish independence and which the Polish government accordingly considered vital to resist with their national force, his majesty's government would feel themselves bound at once to lend the Polish government all the support in their power. They have given the Polish government an assurance to this effect."

Hitler and his foreign minister, Ribbentrop, after the success with which they had "revised" the Versailles treaty and seized one territory after another without becoming involved in war, were foolishly convinced that the same thing could be done again in the case of Poland. They believed that by a war of nerves and threats of force

Poland could be bluffed into yielding and the Great Powers would acquiesce, and if they did not, Germany could make a lightning war (blitzkrieg) against Poland and win such a quick and complete victory that the other powers would be forced to accept the accomplished fact. After Munich Goebbels had proudly and publicly boasted: "We won, because we had the better nerves."

Accordingly, the German press and radio began a violent campaign to incite German opinion against Poland in order to strengthen nerves at home and to intimidate Poland and her supporters abroad. German newspapers rehearsed the "criminal injustice" of the Polish settlement at Versailles, the "frightful maltreatment" of the German minority in Poland, and the "intolerable provocations" of Polish leaders. Germany, it was now argued, needed more elbow room (lebensraum) and could not again tolerate Britain's aggressive "encirclement" policy. On April 28 in a radio broadcast Hitler made a "one and only solution" for the Polish question: if Poland would cede Danzig and the strip across the Polish Corridor, he would be willing to promise to guarantee Poland's western frontier and to sign a 25-year nonaggression pact with it. But in the same speech he declared that he no longer regarded as binding either the German-Polish treaty of friendship of 1934 or the Anglo-German naval pact of 1935, because by their attitude and conduct Poland and Britain had already nullified the treaties.

During the following months the international situation grew more tense. The "white war" of nerves increasingly threatened to turn into a red war of blood. The nazis deliberately provoked border incidents along the Polish frontier; in at least one case Germans disguised in Polish uniforms attacked a German outpost; and these were all played up vigorously in the German press and violently denounced by Hitler. Chamberlain patiently tried to find some peaceful solution, but at the same time made it very clear that if Hitler attacked Poland, Britain would stand by her promise to give Poland the fullest possible armed support. France followed Britain's lead. The great question mark was Russia's attitude. Britain and France sent a military mission to Moscow to win Stalin's adhesion to the "Stop Hitler" front, but they would not agree to Stalin's demand that he be allowed to take military control over the little independent Baltic republics of Estonia, Latvia and Lithuania, and Poland would not agree to his demand that Russian armies be allowed to march across Poland. Hitler, however, was quite ready to agree to these Russian demands, and so on Aug. 24, 1939, was signed a Russo-German pact of friendship and

Hitler then became more insistent to Poland, and at dawn on Sept. 1, without warning or declaration of war, German armies invaded Poland and World War II began. (See World War II.)

Germany's Initial Victories.—In spite of propaganda there was little enthusiasm at first among the German people. They were disappointed that Hitler had not succeeded in achieving his aims without plunging the country into war. They remembered Germany's defeat two decades earlier. They had already been under long strain and privation as a result of Hitler's rearmament program. But the amazingly rapid and complete victory over Poland quickly brought general rejoicing and confidence, especially as the British and French made no effort to invade Germany from the west. Hitler and Stalin were able to divide up Poland between themselves and consolidate their conquests without interference. In the three Baltic states Stalin got a military foothold and then forced them

after farcical elections to vote themselves into the soviet union. At the same time many thousands of Germans whose families had lived for centuries in Estonia, Latvia and Lithuania were uprooted, "repatriated," and settled by Hitler on lands from which conquered Poles were summarily expelled.

On April 9, 1940, after consolidating his position in Poland and finding that Britain and France would not acquiesce in the accomplished fact, Hitler suddenly launched his treacherous attack on Norway and Denmark. A month later his armies swept over the Netherlands, Belgium and northern France. Though Britain's armies were defeated in France, Britain itself was saved by the English channel, by indomitable courage, by the heroic withdrawal from Dunkirk and by the royal air force.

In the spring of 1941 Hitler's armies made a quick and easy conquest of Yugoslavia and Greece and even occupied Crete by airborne troops. But this Balkan diversion caused a fatal three-months delay in his supreme act of folly—the invasion of Russia on June 22, 1941. His armies crowded the Russians back over their limitless plains and eventually reached the outskirts of Leningrad, Moscow and Stalingrad. But in spite of desperate fighting and great losses Hitler could not capture these Russian strongholds. Stalin managed to escape a crushing defeat for the Red armies by withdrawing eastward and by removing many of his munitions works to the Ural Mountains regions. The German armies did penetrate in the south to the Caucasus mountains, gained control of some of the valuable oil wells, and hoped to push on through the near east to attack Egypt and the Suez canal.

This vital British region was also menaced by a German-Italian force under General Erwin Rommel advancing eastward across North Africa, thus threatening to crush the British in Egypt by a great German pincers movement from east and west. But before the pincers could close, the tide of war turned.

These great victories of 1939-42 brought vast areas under Hitler's control and provided food, raw materials and manpower which to some extent bolstered Germany's economy. As a consequence, the German people enjoyed a considerably better standard of living than the conquered lands during these years.

Prisoners of war were made to work in German fields and factories, and millions of workers in the conquered countries were forced to come to Germany and labour under hard conditions as the only alternative to starvation or the concentration camp.

By his so-called "New Order," Hitler sought to bring nearly all Europe under a centralized economic control directed from Berlin. Germany was to become not only an arsenal of munitions but also an even more highly industrialized country than hitherto. By enforced trade agreements and exchange controls it would be supplied with needed food and raw materials from the conquered lands which would be reduced mainly to an agricultural economy and be made incapable of developing armaments for a possible revolt against the nazi masters. This ruthless economic exploitation of the conquered lands and the brutal and inhuman tyranny of the nazi police prevented any possibility that the vanquished might become reconciled to German rule. On the contrary, the great majority of the conquered populations felt an intense bitterness and built up secret underground "partisan" opposition movements. These, however, were able to accomplish little until Hitler's armies began to suffer defeats



erators.

Germany. The food shortage in that city reached acute proportions
during the winter of 1945-46

and until the Allies began to advance as liberators.

Downfall, 1943-45.—Hitler's own obstinacy and dictation of strategy disapproved by his more prudent generals contributed to his disastrous defeats in Russia. He stubbornly refused to draw back his armies after powerful Russian counteroffensives threatened to make his position untenable. On Jan. 31, 1943, after very heavy losses in the futile efforts to capture Stalingrad, Field Marshal Friedrich von Paulus and what was left of his army of 330,000 officers and men were compelled to surrender to the Russians. This disaster was a serious blow to German prestige and to Germany's position in Russia. Gradually the German armies were driven out of the Caucasus region, the Crimea, and the rich Ukraine and compelled to retreat toward Berlin.

Meanwhile, on Oct. 23, 1942, General Rommel was defeated at El Alamein on the frontier of Egypt and was forced to flee westward for 1,000 mi. through North Africa to Tunisia. On November 8 an immense British and American amphibious armada landed Allied forces in Northwest Africa. These secured some co-operation from the French and pressed eastward to strike at Rommel's retreating Africa corps. What was left of it-about 267,000 Germans and Italians-finally surrendered in Tunisia on May 13, 1943. The German pincers threat to Egypt had come to an ignominious end. British and U.S. ships could move more safely through the Mediterranean. On the night of July 9-10, 1943, another tremendous Allied armada landed troops in Sicily, drove out the Germans, and then crossed to the Italian mainland to free the country from the nazi grip after Mussolini had been overthrown on July 25.

Allied bombing of Germany, which became severe in 1942, was greatly intensified during the next three years as

a preparation to the Allied invasion of Germany itself. From April 1 to Dec. 5, 1943, giant British and U.S. planes rained down more than 250,000 tons of explosive and incendiary bombs, killing 124,630 persons, according to German figures, and doing great damage to German industrial centres. But this was slight in comparison to the terrific pounding inflicted on the country in 1944 and early in 1945. Allied bombing was largely concentrated on industrial and munitions plants, railroads, bridges and canals, and synthetic gasoline works and dumps. The German transportation system was so completely disrupted that Hitler was unable to move his troops rapidly to threatened points after the Allies opened a second front in Europe by the successful landing in Normandy on June 6, 1944. The German gasoline shortage became so acute that Hitler's luftwaffe and motorized equipment were rendered almost useless. This Allied bombing partly explained the rapid collapse of Germany's forces as the Allies invaded Germany itself in the winter of 1911-45 after liberating the peoples in the nazi-conquered lands.

On April 30, 1945, as the Russians were battling into the streets of Berlin, Hitler and Goebbels committed sucide, and their example was later followed by Himmler and several other nazi leaders. On May 7 the Allied terms of unconditional surrender were signed by German officers at Rheims and confirmed the next day in Berlin Admiral Karl Doenitz acted as Hitler's successor as head of the reich for three weeks, but on May 23 he and some 300 other highest officers and civilian officials were taken into custody at Flensburg in Schleswig. This marked the final end of the third reich which Hitler had boasted would last 1,000 years.

Allied Military Government.-On June 5, 1945, the Allies announced that Germany west of the Oder would be ruled for an indefinite period in four military zones administered respectively by U.S., British, Russian and French authorities. Greater Berlin (341 sq.mi.) was to be jointly administered by a quadripartite board whose presiding officer was to rotate monthly between the four occupying powers. Unity of administration for all Germany in such matters as transportation, posts and telegraphs, tariffs and other economic matters was to be secured as far as possible by a Four-Power Control board sitting in Berlin. But as it could act only with the unanimous agreement of all four powers, its efficiency was very much hampered. Russia continually blocked proposals of the western democracies, and France was unwilling to see central German administrative agencies set up until the industrial Ruhr area was put under international control or in some way deprived of German control and the possibility of a revival of Germany's armaments. Germany thus remained badly handicapped both politically and economically, and each of the four Allied powers pursued different policies in their respective zones. In the autumn of 1946 the U.S. and British authorities, despairing of any immediate unity of administration in all four zones, took steps to unify the administration of the U.S. and British zones, leaving the way open for the Russians and French to adhere to their arrangements.

The U.S. zone (43,136 sq.mi.) comprised Bavaria and west central Germany, including parts of Wuertemberg, Baden, Hesse and Nassau, and also an enclave territory around Bremen within the British zone through which the U.S. could ship in supplies for its military government forces and officials. The U.S. zone had a well balanced economy with both industry and agriculture, but was burdened with a great number of "displaced persons" and German deportees from regions east of the Oder. Denazification was carried out more completely in the U.S. zone than elsewhere. Fraternization of U.S. troops with the German population was at first forbidden, but later permitted because the prohibition was difficult to enforce.

The U.S. zone took the earliest and most complete steps for organizing democratic self-government among the Germans. Elections of officials were held successively in villages, districts, and large towns, and finally delegates were elected to constitutional conventions in each of the three "Lands" or states created in the American zone as possible member units in a later federal German government (Bavaria, Wuertemberg-Baden and Greater Hesse). On Oct. 24, 1946, the constitutional convention of Wuertemberg-Baden adopted a constitution as more or less of a model for the other two states. It provided for a legislature (Landtag) of 100 members elected for 4 years. The premier was to be chosen by the legislature for four years, but could be forced to resign by a vote of no confidence, while the legislature itself could be dissolved by a plebiscite before its term was up. A detailed bill of rights protected freedom of speech, the press, religion, assembly and equality before the law.

The British zone (36,869 sq.mi) was made up mostly of Prussian territory, and stretched across north Germany from Luebeck and the Baltic sea to the Dutch and Belgian frontiers. It included the highly industrialized Rhine-Westphalian area, so that the British were naturally more inclined than the other Allies to aid German industrial recovery, in order to furnish employment and to produce

Occupation troops driving jeeps through the streets of Frankfurt, Germany, during the parade which marked the first anniversary of V-E day in May 1946



needed manufactures and exports with which to pay for food and raw materials from abroad.

The relatively small French zone (21,558 sq.mi.) included two triangular districts separated from each other: southern Baden and western Wuertemberg in the southwest; and the Saar and Rhineland in the west. The French aimed to link their zone politically and economically as closely to France as possible.

The Russian zone (41,339 sq.mi.) lay largely between the Oder and the Elbe rivers, and included all or part of Brandenburg, Mecklenburg, Pomerania and the industrial Saxon and Thuringian territories. The Russians at once carried off great amounts of industrial equipment from their zone, and began to divide up the great estates in order to create small farms. They ruled their zone by totalitarian methods. They brought back numerous German Communists who had been living as refugees in Moscow

Germany: Statistical Data, 1938

ltem	Value (000's omitted)	Amount or Number
Exchange rate United States	(000000	1 Reichsmark =
Great Britain		40.16 cents 11.60 Reichs- marks =£1
Finance Government revenues	\$5,606,091	
Gold reserves	(£1,146,674) \$28,436	ø
National debt	(£5,816) \$9,583,653 (£1,960,248)	
Transportation Railroads		42,299 mi. 262,874 mi.* 7,000 mi. 3,542 mi.
Communication Telephones		4,146,489 236,260 mi.
Radio sets		16,000,000*
Aluminum		355,161,060 lb. 12,057,674 tons 214,254 " 189,265 " 205,225,112 "
Coal		205,225,112 "
Potatoes		56,101,000 tons 42,377,000 ,, 17,136,000 ,, 9,530,000 ,, 9,487,000 ,,
Livestock Poultry		97,129,800 23,481,328 19,911,200
Rabbits		8,044,800
Total Herring (fresh and salted) Cod Redfish		740,205 tons† 203,430 ,, † 139,092 ,, † 59,670 ,, †
Coalfish (pollack)	\$2,111,421	67,624 " † 57,159,000 tons
Machinery	(£431,872) \$304,082	
Iron ware	(£62,197) \$193,992 (£39,679)	***
Coal and coke	\$101 181	39,753,000 tons
Chemicals	(£39,104) \$153,386 (£31,374)	•••
Imports—Total	\$2,188,657 (£447,670)	69,026,000 tons
Manufactured goods	\$159,331 (£32,590)	611,000 "
Beverages and tobacco	\$139,289 (£28,490)	487,000 "
Fruits	\$120,813 (£24,711)	1,065,000 "
Iron ore	\$113,062 (£23,126)	24,171,000 "
Defense Standing army personnel Reserves Standing air force personnel		750,000 3,150,000
Reserves		206,000 20,000
*1939. †19 37.		

during the war and placed them in all the best positions. They forced the Social Democrats to unite with the Communists to form the so-called Socialist Unity party. But these totalitarian methods so antagonized the people of Berlin that the Russian-backed Socialist Unity party was badly beaten in the Berlin elections for the city council held under quadripartite supervision on Oct. 20, 1946. The provisional returns showed the following vote: Social Democratic party, 947,440; Christian Democratic union, 442,837; Socialist Unity party, 389,783; Liberal Democratic party, 179,761. The women's vote was decisive, since from an electorate of 2,363,000, of whom 83% went to the polls, about 1,400,000 were women and only 900,000 were men. (See also Alled Control Council for Germany; Fascism; National Socialism; World War II.)

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Gerow, Leonard T.

Gerow (1888-), U.S. army officer, was born July 13, 1888 in Petersburg, Va. He was graduated from Virginia Military institute, Lexington, Va., in 1911, and was commissioned a 2nd lieutenant in the U.S. army. He served in the Mexican campaign and went overseas with the U.S. expeditionary forces to France in 1918. Following the end of World War I, Gerow was stationed in Shanghai and the Philippines. He was chief of staff of the war plans division under Gen. George C. Marshall at the time of the Pearl Harbor attack, and was promoted to the rank of major general in Feb. 1942. He went to England in July 1943 as the commander of U.S. field forces; the following year he was named commander of the U.S. 5th corps. Gen. Gerow participated in the Normandy landings in the summer of 1944, the drive on Paris, the battle of Aachen and the Ardennes campaign in the winter of 1944-45. In Jan. 1945 he was promoted to the temporary rank of lieutenant general. The following March he was assigned to form a new army, the U.S. 15th, which was subsequently designated as the army of occupation for the U.S. zone of Germany. He left the command of the 15th army in July to become head of a board of U.S. officers charged with making a detailed study of the war.

Testifying before the congressional committee investigating the Pearl Harbor attack, Gerow accepted responsibility for the army's failure to strengthen the defenses at Pearl Harbor in spite of warning of a possible Japanese attack.

Gestalt Psychology

See Psychology.

Ghavam-es-Saltaneh, Ahmad

Ghavam-es-Saltaneh (1872?—), Iranian statesman, was born of an artistocratic landowning family and inherited vast estates in Azerbaijan province. He held his first cabinet post in 1910 and was governor general of Korasan province in 1918. Ghavam was premier from June 1921 to Jan. 1922 and from June 1922 to Feb. 1923. Following his second tenure, he was banished from the country on a charge of plotting against the life of Riza Khan Pahlavi. Permitted to return in 1929, he re-entered public life and again held a number of important cabinet posts. He returned as premier in June 1942, but was forced to resign in Feb. 1943 because of the Tehran bread riots in which his home was pillaged and burned.

On Jan. 26, 1946, the Iranian parliament, by a one-vote margin, named Ghavam as premier for a fourth time. Ghavam thereupon entered direct negotiations with the U.S.S.R. to resolve the Azerbaijan dispute and visited Premier Joseph Stalin in Moscow (March 1946) to discuss the overdue withdrawal of Red army troops from Azerbaijan. On March 15, 1946, he notified the Big Three that he intended to appeal to the United Nations security council against continued presence of Red army troops on Iranian soil. Later, Ghavam announced (April 5, 1946), in a communiqué issued jointly with the soviet ambassador to Tehran, that the U.S.S.R. and Iran had reached complete agreement on all matters.

Ghormley, Robert Lee

Ghormley (1883–), U.S. naval officer, was born Oct. 15, 1883, in Portland, Ore. He was graduated from Annapolis in 1906 and was in command of U.S. forces during the Nicaraguan campaign of 1912. During World War I he was decorated for his work as assistant director of the overseas division of the naval overseas transportation division. He was appointed assistant chief of staff to the navy's commander in chief in 1931, and the following year headed the tactical section (fleet training division) in the office of the naval operations chief. Made a rear admiral in Oct. 1938 and a vice admiral in 1941, Ghormley was ordered to Auckland, N.Z., in April 1941 to set up a joint U.S.-New Zealand naval command and was appointed commander of Allied land, sea and air forces in a South Pacific zone. Adm. Ghormley directed the landing of marines on the Solomon Islands on Aug. 7, 1942, and the ensuing land-sea-air operations there until Oct. 24, when he was relieved by Vice-Adm. William F. Halsey. He was Hawaiian sea frontier commander from March 1943 to Nov. 1944, when he joined Adm. Stark's staff in London. On May 16, 1945 he was named commander of U.S. naval ports and bases in Germany. Adm. Ghormley announced his retirement April 19, 1946.

G. I. Bill of Rights

See Education; Law; Veterans' Administration.

Gibraltar

A narrow peninsula situated at the western outlet of the Mediterranean, Gibraltar runs southwest from the southwest coast of Spain and consists of a long, high mountain known as "The Rock" and a flat sandy plain, raised only a few feet above the level of the sea, to the north. Area, 17% sq.mi. Language: mainly Spanish. Religion: mainly Roman Catholic. Civil pop. 1931, 17,613; 1938, 20,138.

Governors (with dates of assumption of office): General Sir Charles Harrington (Oct. 20, 1933); General Sir Edmund Ironside (Nov. 9, 1938); Lieutenant General Sir Clive Liddel (July 11, 1939); General Viscount Gort (May 14, 1941); Lieutenant General Sir Noel Mason MacFarlane (June 19, 1942); Lieutenant General Sir Ralph Eastwood (after Feb. 27, 1944.)

No event of special importance occurred at Gibraltan between 1937 and the outbreak of World War II. Nor was the colony greatly affected during the opening months of the struggle; but the spread of hostilities to the Mediterranean, consequent upon Italy's entry into the war in June 1940, created an entirely new situation. The British government found itself under the imperative necessity of placing the fortress in a state of adequate defense. The attitude of Spain, under the Franco regime, was equivocal from the first; and it was always doubtful how far the Spanish authorities could be relied upon to resist any plans that the Germans might have in contemplation (it became known after the war that they did in fact form such plans) for attacking Gibraltar through the Spanish territory.

In some respects Gibraltar was not well-prepared to resist an assault. It had suffered from overcrowding for many years, and the position had been aggravated by an influx of refugees during the Spanish civil war. It was essential, as a matter of military precaution, to remove "useless mouths" from what might, almost at any moment, become a beleaguered fortress. About 11,000 Gibraltarians were landed in England by the middle of Aug. 1940. Some 2,000 others, mainly persons able to make their own arrangements, proceeded to Madeira, while about 1,500 were sent direct to Jamaica. In all, the total number of persons evacuated amountéd to 16,700. The evacuees in England were concentrated in London. The process of repatriation began in March 1944 but had not gone far when the flying bomb attacks on London necessitated the removal of the evacuees to Northern Ireland. By the middle of Jan. 1946 the number of persons repatriated to Gibraltar was more than 12,000; the return of the remainder was contingent upon the progress made with local building schemes. As events turned out, the threatened attack on Gibraltar never developed; but, so long as hostilities continued in the Mediterranean, the colony remained in a state of acute military tension.

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(J. E. SH.)

Gilbert Islands

A group of 16 Pacific islands which played a brief but memorable role in World War II, the Gilbert Islands were the scene of one of the hardest battles in the history of the U.S. marines. A British protectorate after 1892 and a crown colony after 1915, the Gilbert and Ellice Islands colony in 1938 was enlarged by the addition of the Phoenix Islands.

The islands in this part of the Pacific had until this time received little attention, but their strategic importance now began to be realized. Their position directly south of the Japanese mandated islands, and on the air route to Australia, led to contention between the United

States and Great Britain as to sovereignty over two of the Phoenix Islands—Canton and Enderbury. Agreement was reached in 1939, when these two islands were placed under Anglo-U.S. condominium and Canton became a station of Pan American Airways.

However, little was done to fortify any of the islands and the three most northerly Gilberts fell an easy prey to Japan on Dec. 9, 1941, two days after war began in the Pacific. The next day Tarawa was raided and looted, but not occupied until some months later. The Japanese did not invade the Ellice Islands. Allied forces took advantage of this neglect in March 1943 when they occupied Funafuti, principal Ellice atoll, and there organized for the historic attack upon the Gilberts on Nov. 20, 1943.

On the second day of the battle of Tarawa (see below) the British resident commissioner of the Gilbert and Ellice Islands colony, Lieut. Col. Vivian Fox-Strangways, came ashore. In a dual ceremony the U.S. flag was run up to signalize the victory of the U.S. navy, and the British flag to mark the resumption of British civil control. The islands were thenceforth used as a base for the further advance upon the Marshalls. (See also Pacific Islands, British.)

(W. PE.)

U.S. Operations in the Gilbert Islands.—The capture of the Gilbert Islands from the Japanese in Nov. 1943 was a necessary preliminary to the capture of the Marshalls. It cleared the area of Japanese and brought the islands back under British rule. U.S. long-range, land-based aircraft moved to positions from which they could conduct the photographic and other reconnaissance of the Marshalls needed for further amphibious operations. These planes could prepare for and support such operations by bombing raids on the Japanese bases.

Three atolls in the Gilberts—Makin, Tarawa and Apamama—were selected for U.S. capture and development. Of these, Makin was lightly fortified and held by only about 450 Japanese. It had no airfield and was 200 mi. south of Mili and Jaluit, the nearest Japanese bases in the Marshalls. Tarawa, 100 mi. south of Makin, was the centre of Japanese strength. Betio Island of Tarawa atoll was strongly fortified; it had an air strip and a garrison of

about 4,000 troops. Apamama, 60 mi. south of Tarawa, was undeveloped and was occupied by a token force of 25 Japanese, who killed themselves when the U.S. marines landed. On islands of all three atolls airfields could be built. Makin and Tarawa lagoons had fair anchorages, but Apamama lagoon had insufficient depth of water for large ships.

The 165th infantry of the U.S. 27th division, which had been training in the Hawaiian Islands, was selected to take Makin. The 2nd marine division, which was recuperating at Wellington, N.Z., after Guadalcanal, was designated to take Tarawa. Naval support, made up of aircraft carriers, battleships, cruisers, destroyers, transports and amphibious shipping of all kinds, required everything available in the U.S. Pacific fleet. U.S. army heavy bombers, operating from air fields on three islands in the Ellice group and from Canton and Baker Islands, belonged to the 7th air force.

Funafuti Atoll, in the Ellice group, with an excellent anchorage and an air strip, lay 700 mi. southeast of Tarawa and was the nearest U.S. advanced base. Canton Island, with excellent air facilities but no anchorage, was more than 900 mi. to the eastward of Tarawa, with its staging field on Baker Island advanced 300 mi. toward the Gilberts.

The landings on Makin and Tarawa were scheduled to take place on Nov. 20, 1943. Before daylight on that day there was a great assemblage of ships of many types off those atolls. The ships had started from various places thousands of miles apart—the Hawaiian Islands, Samoa, the Ellice Islands, New Zealand and the New Hebrides. The fast-carrier task force had arrived in the area two days earlier to cover the movement of the transports and to make preliminary air strikes and bombardments on the Japanese positions.

At Makin the U.S. landings encountered light opposition and the island was captured with small losses. At Tarawa, however, the Japanese opposition was very strong and effective. Betio Island, which had the air strip and which commanded the entrance to the lagoon and the anchorage, was a mass of interlocking defensive positions.

Aftermath of casualties and destruction following the savage battle for Tarawa in Nov. 1943



some of heavy concrete, some underground and many reinforced with coconut logs. Underwater obstructions and mines blocked the seaward beaches of the island. Guns, ranging in size from 8 in. down, were emplaced so as to command all approaches to the island.

The assault started at daylight with naval bombardment and bombing, followed after several hours by landings made through the lagoon over the fringing coral reef on the inside of the island. The first wave of troops embarked in amphibious tractors were able to advance over the reef in the face of heavy fire until they reached the beach. Succeeding waves, however, were embarked in boats which grounded on the reef some distance from shore. These troops had to disembark in the water and wade ashore, with resulting heavy casualties. The landings had been timed for high tide, but an unpredictable phenomenon, known locally as "dodging tides," occurred, which prevented the normal high water from covering the reef.

Betio Island was captured, and the other islands extending for 20 mi. around Tarawa atoll were cleared of Japanese, after 4 days of very bitter fighting. U.S. casualties ashore amounted to nearly 1,000 men killed on Tarawa, and about 70 killed on Makin. Further U.S. losses occurred when the escort carrier "Liscome Bay" was torpedoed by a Japanese submarine off Makin early one morning with the loss of about 700 men. Japanese killed during the operation were estimated at about 4,000. Valuable lessons were learned at Tarawa as to the best methods for assaulting and capturing heavily defended island positions with a resulting saving of many lives in later operations.

The capture of the Gilberts was an important first step in clearing the Japanese from the island strongholds with which they blocked the central Pacific approaches to Japan and north China—the Marshalls, Marianas, Carolines, Iwo Jima and Okinawa. It was the start of the northern prong of the two-pronged offensive which crushed Japan. (R. A. SE.)

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Gilroy, Norman

Cardinal Gilroy (1896-), archbishop of Sydney, Australia, was born in that city on Jan. 22, 1896. At 18 he left Marist Brothers college, Kogaral, to take a position in the telegraphic department of the postmaster general's office. He enlisted in World War I and served as radio operator on a troopship. Entering a seminary immediately after his discharge from service, he was ordained priest in 1923 and went to the Urban College of Propaganda in Rome to complete his studies. He became secretary to the apostolic delegate to Australia in 1924 and to the bishop of Lismore in 1931. He served as chancellor of the diocese of Lismore from 1931 to 1935, when he was named bishop of Port Augusta. Elevated to the position of co-adjutor archbishop of Sydney with the right of succession in 1937, he was designated archbishop on March 8, 1940. He conducted a vigorous campaign against the legalization of the Communist party of Australia, a proposal which had been sponsored by the extreme section of the trade unions and other organizations. Created a cardinal by Pope Pius XII on Feb. 18, 1946, he was the first of Australian birth to attain this rank.

Gin

See Liquors, Alcoholic.

Ginger

See Spices.

Giraud, Henri Honore

Giraud (1879—), French army officer, was born Jan. 18, 1879, in Paris and attended St. Cyr Military academy and the École Supérieure de Guerre. Early in World War I, he was wounded and captured by the Germans, but escaped in 1915 and returned to the front. Toward the end of the war he was chief of staff of a Moroccan division. He participated in the Riff campaign until the surrender of the Riff leader, Abd-el-Krim, in Jan. 1926.

After the German break-through at Sedan in May 1940, General Giraud took command of the Allied armies in northern France, but he and his staff were captured and interned in Koenigstein prison, Saxony. In April 1942, Giraud staged another daring prison break and escaped to Vichy via Switzerland. He soon fled Vichy and offered his services to the U.S. armies at the start of the North African campaign. In Nov. 1942 Giraud was named commander of all French armed forces in North Africa; after Admiral Jean Darlan's assassination the following month, he became high commissioner of French North Africa.

During 1943 Giraud and De Gaulle engaged in a struggle for power. On Feb. 6 Giraud assumed the title of French civil and military commander in chief in North Africa. He severed all ties with Vichy and pledged restoration of free republican rule in France after the war. By the summer of 1943, however, his popularity had ebbed, although he had the backing of the U.S. state department and Great Britain, the majority of Frenchmen supported De Gaulle. Giraud finally invited his rival to Algiers and on June 3, 1943, a new governing body for anti-Vichy France was created with de Gaulle and Giraud serving as co-presidents. Subsequently Giraud lost ground to De Gaulle. In Nov. 1943 he resigned as co-president of the French Committee of National Liberation, and in April 1944 his position as commander in chief was abolished and he was retired. He left Algiers in Oct. 1944. After the Allied victory, Giraud participated in local French politics and was elected to the French National assembly for Metz on June 2, 1946.

Girl Guides

See Societies and Associations.

Girl Scouts

See Societies and Associations.

Glacial Geology

See GEOLOGY.

Glands

See Endocrinology; Medicine.

Glasgow

City, county, royal burgh and port of Lanarkshire, Scotland, Glasgow is situated on both banks of the Clyde. Pop. (est. 1940) 1,131,800 (1938 census, 1,127,825). By 1937, Glasgow was recovering from the effects of the serious depression of the early 1930s. The west of Scotland, which had concentrated largely on the heavy industries, had suffered more acutely than many other areas. Unem-

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ployment, which had reached the figure of 131,820 in 1933, was reduced to 73,515 in 1937, and by 1939 fell further to 58,314. This improvement reflected to some extent the general recovery throughout the world but was also partly caused by the government's rearmament program.

In 1938, the empire exhibition was staged at Bellahouston park. The purpose was to display the products of Scotland and the British empire generally and also to demonstrate the cultural and artistic activities of the various countries taking part; 12,593,232 people visited the exhibition during its six months' existence. The later months were overshadowed by the threat of war, and during the following year the city became increasingly concerned in preparations to meet this danger.

During World War II the city suffered a number of air attacks, the most severe of which took place on the nights of March 13 and 14, 1941. Altogether, 848 persons were killed and 1,811 wounded during the various raids, and 21,962 buildings were destroyed or seriously damaged.

In the field of war production, the record of Glasgow and Clydeside was impressive. Nearly 200,000 people were engaged in the shipbuilding and aircraft industries, and many more were employed in the manufacture of tanks, guns, etc. During the greater part of the war the Clyde was the chief port in Great Britain, and vast quantities of material and large numbers of men passed through Glasgow, including contingents of the U.S. and Canadian armies. The most dramatic single incident of the period was the parachute descent and capture of Rudolf Hess on the outskirts of Glasgow on May 10, 1941.

With the war at an end, the industrial activity of the city slackened to some extent, and unemployment figures rose. Efforts to attract light industries and an appreciation by the government of the strategical advantages of the geographical situation of Glasgow would, it was hoped, ensure a prosperous future. (H. McN.)

Glass

Glass was more profoundly affected by World War II than by any other influences during the decade 1937–46. Not only were many factories damaged or destroyed in the European countries, but the character of production and research was necessarily geared to military requirements, and manufacturing was seriously handicapped everywhere by virtual stoppage of international trade and by shortages of fuel, labour, and materials. Cooperation among glass technologists of different countries, fostered by such events as the Glass congresses of 1933 and 1936, ceased perforce.

In England, the Glass delegacy, implemented by research at the Department of Glass Technology, University of Sheffield, maintained development and production at a high level despite handicaps. Great credit for progress in this period, as in two decades preceding, must be given to Prof. William E. S. Turner, head of the department at Sheffield, who as teacher, director of research, editor and consultant became the leading figure of the decade in glass technology.

Many English factories were damaged by bombing. The cessation of imports required the beneficiation of British sands to replace imported sands, and other materials were in short supply. Nevertheless, optical glass was made sufficient for military needs, window glass was produced to replace much that was broken by bombing, and numerous researches and technical developments were carried out. Among the latter may be mentioned further improve-

ment in the Pilkington process of continuous plate-glass manufacture, in which progress was made in the attempt to grind both sides of a plate simultaneously and polish in a similar manner.

In Germany and elsewhere in Europe, glass plants suffered heavy damage during the war. German production was governed almost exclusively by military needs. Substitutes had to be found for some of the ordinary fuels and raw materials.

Several important technological developments reached the production stage in the United States during this period. "Foam glass," a cellular product weighing less than ten lb. per cu.ft., was a new superior heat insulation for many purposes, and replaced cork in life rafts and buoys. Early work on this product was done by Bernard Long, in France. "Vycor," a high-silica glass invented by M. E. Nordberg and H. P. Hood of the Corning Glass Works, could not be broken by thermal shock, and formed superior laboratory apparatus. Lightweight bottles, made by improved techniques in numerous plants, economized cost and freight. Nonreflecting films, produced on lenses by several methods, increased speed and definition in photography.

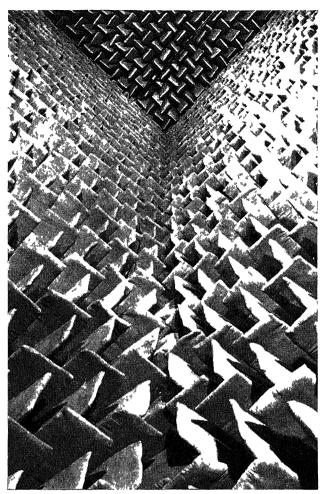
Advances were made in uses of glass fibres, which could be spun into threads for yarns and fabrics, replacing animal and vegetable fibres for some purposes. One promising material was a plastic re-enforced by glass fibres to produce a remarkably strong composite material.

In marked contrast with 1917, the beginning of World War II found the United States fully prepared to make optical glasses for all needs of the armed forces. Glasses for bulbs and tubes for radio and radar were ready as these techniques expanded.

The technique of toughening glass by prestraining or disannealing were improved and applied to cooking utensils, automobile glass, heavy plate glass doors, and bulletproof glass for military uses. Cups and dishes for army mess halls were so heat-treated as to have at least three times ordinary impact resistance. Safety glass for automobiles became standardized with superior plastics for the intermediate layer and polished plate glass ½ 2-in. thick for outside layers. "Multi-form glass" (Corning), made in tiny or intricate shapes by pressing powdered glass mixed with a binder and then heating the product to weld the particles, served for insulators and other small parts not otherwise possible to fabricate from glass. Precision gauges of glass surpassed metal gauges in accuracy and low cost.

The application of a more sound engineering principle to the design of bottles, whereby the sides met the bottoms in smooth curves instead of squarely, improved their resistance to impact and pressure as well as their appearance.

In tank-furnace construction, ports of greater width provided better flame coverage for the heated bath and batch. The suspended back wall (Simplex) was an innovation that allowed the batch to be fed in a continuous blanket across the tank. These steel-hung bricks were also applied as a suspended shadow wall, replacing the trouble-some jack arch dividing melting chamber and drawing chamber in flat glass tanks. Cast-mullite (Corhart) blocks to retain the molten glass were improved and continued to show superiority over clay blocks for some melting units. The still more refractory cast-alumina "Monofrax" (Carborundum Co.) blocks made their appearance. New fuel gases, represented by propane, were used as cheaper fuels became occasionally scarce. Air for combustion was fed to the furnaces by fans instead of by natural draft.



Twenty thousand fiberglas stalactites lining the walls of the "anechoic" (echo-free) chamber at the Harvard electro-acoustic laboratory where problems of reducing noise in aeroplane cabins and improving high altitude communication were solved with success during World War II

Research on glass in the United States expanded in scope and facilities. Corning Glass works, Owen-Illinois Glass Co., Libbey-Owens-Ford and Owens-Corning Fiberglas were among companies installing new and wellequipped laboratories. Glass Science, Inc., was established for research apart from industrial application. Refined methods for estimating density emerged as effective tests for control of composition. Investigations by X-ray of atomic arrangement in glasses established the fact of absence of crystalline structure and led to interesting ideas about the constitution of glass. Silica-free glasses of unusually high index of refraction were developed by George W. Morey. Glass compositions promoting faster production and better quality appeared in containers and flat glass. New optical glasses and optical systems aided in particular aerial photography.

The literature of glass expanded as never before. In 1938, Morey's Properties of Glass brought together all of the important facts about glass that had previously been established. Members of the Glass Division, American Ceramic society, used its Journal and Bulletin for reporting many researches; its Geramic Abstracts covered other papers from periodicals all over the world. The Journal of the Society of Glass Technology continued, in spite of the war, to hold its leading position in the publication of abstracts and original papers. The Glass Industry (New York) and Ceramic Industry (Chicago) reported news

of the industry, inventions and occasional researches, while the *National Glass Budget* (Pittsburgh) continued its faithful week-by-week recording of trade conditions. Several German journals continued publication well into the war period. However, Heinrich Maurach, the leading editor, was antinazi and was obliged to give up his work.

During the decade, production of glassware of all sorts in the United States reached high tonnage and record value. The scarcity of tin during the war created enormous demand for glass bottles and containers to replace tin cans for the preservation of food. At the same time, production of closed automobiles practically ceased, and new construction of dwellings and other civilian buildings was at a low ebb. Accordingly, the demand for polished plate glass declined. Comparative figures for the period show the changes in rates of production:

Type Polished Plate	1937	1911	1945
Glass, sq.ft. Bottles and Con-	208,000,000	190,400,000	102,000,000
tainers, Glass Window Glass, sq.it.	53,000,000 570,000,000	70,400,000 820,000,000	99,700,000 no data

The increase in window glass production between 1937-41 resulted from two main causes: the construction of barracks for troops, and the lack of imports from countries like Belgium.

Figures released by the U.S. bureau of census for 1942 show the melting capacity of various units:

	Pot Furnaces	Day Tanks	Continuous Tan!
Number Installed	202	282	610
Number of Pots	1,536		•
Tons of Product			
per year	80,000	35,000	5,000,000
Potential Annual			
Production, Tons	143,000	87,000	6,300,000

In 1941, the American glass industry consumed 1,000,000 tons of coal, 80,000,000 gal. of fuel oil, 80,000,000,000 cu.ft. of natural gas and other clean gases, and 1,000,000,000 kw.hr. of electrical energy.

The value of glassware of all sorts produced annually in the United States doubled during the decade, rising from \$280,000,000 to \$570,000,000. Prices rose comparatively little. The consumption of sand reached 3,500,000 tons by 1945, and of soda ash, 1,250,000 tons, or one-fourth the total made. Actual deficiency of soda ash for glassmaking resulted. The number of operating factories remained fairly constant, around 250 for the entire period. The industry became almost completely unionized. The high degree of mechanization was reflected in the fact that wages amounted to only one-fourth the value of the product.

By the consolidation of companies, four or five (of the United States) corporations came into control of the container industry. One corporation, through ownership of patents, controlled all practical methods of producing bottles by machinery. This condition formed the basis of an antimonopoly suit which was bitterly contested for about five years. The trial court decree ordered relinquishment of mutual stock holdings by the corporations involved, and directed open licensing, without royalty, of feeder, forming machine, lehr, and other patents. An appeal to the U.S. supreme court brought about certain modifications of the original decree, but the industry was left in a more competitive condition. (See also STANDARDS, NATIONAL BUREAU OF.)

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Glassford, William Alexander II

Glassford (1886—), U.S. naval officer, was born June 6, 1886, in San Francisco. He was graduated from the U.S. Naval academy in 1906, and during World War I served as a gunnery officer on a destroyer and later as an executive officer on a destroyer tender. He won the D.S.M. for bringing the destroyer "Shaw," of which he was commander, safely into port after a collision with a British vessel. During the period from 1924–35, he was assistant director of naval communications, staff member of the Naval War college, commander of the battle force and commander in chief of the U.S. fleet.

After Japan attacked Pearl Harbor, Glassford, who was commander of the Yangtze patrol, was placed at the head of the newly organized Southwest Pacific naval command in Feb. 1942. Later that month, he participated with the Dutch fleet in the battle of the Java sea. He was then given the post of commandant of the 6th naval district and Charleston navy yard. In May 1943 Adm. Glassford, who had negotiated the agreement with the French authorities opening Dakar to U.S. naval forces, was appointed Pres. Roosevelt's personal representative, with the rank of minister, to French West Africa. At the same time, he was promoted to the rank of vice-admiral. In Aug. 1944 he was sent to London with a naval mission to prepare plans for the demobilization of the German navy; he was also charged with the administration of U.S. naval affairs in liberated Europe.

Glennon, John Joseph

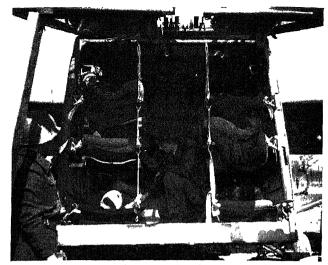
Cardinal Glennon (1862-1946) archbishop of St. Louis, was born at Kinnegad, County Meath, Ireland, on June 14, 1862. He was ordained at Kansas City, Mo., 1884, and served as vicar general of the diocese of Kansas City. Consecrated titular bishop of Pinara and coadjutor bishop of Kansas City June 29, 1896, he was transferred to St. Louis as coadjutor to the archbishop, April 27, 1903, and became archbishop of St. Louis Oct. 13, 1903.

World War I saw the intensification of Archbishop Glennon's already amazing activity. He had frequently expressed the hope that the United States might be spared the disasters of war, but once war was declared he threw himself unreservedly into the patriotic works that it required. He was one of the signers of the document of Catholic loyalty and patriotism sent to Pres. Wilson on April 19, 1917. During World War II, Archbishop Glennon constantly urged civilian defense, as a task for each man "joining with his neighbour to save his community." He stressed defense of U.S. rights and liberties, not only against threats from abroad but against abuse in the U.S.

Nominated to the Sacred College of Cardinals, according to an announcement of Dec. 23, 1945, he was created and proclaimed a cardinal at the consistory of Feb. 18, 1946. On his return from Rome he paid a visit to his native Ireland, where he was stricken and died on March 9, 1946, at Dublin, Eire.

Gliding

Gliding and soaring came of age during the decade 1937-46. Several of the European countries, notably Germany, Poland and Sweden, required experience in motor-



Evacuation of U.S. casualties from the Rhine front in the spring of 1945 was speeded by ambulance gliders fitted with triple tier bunks

less aircraft as a prerequisite to power plane flying or as parallel training. Japan and the U.S.S.R. introduced large-scale glider pilot training programs for their youth. Gliding clubs were formed in many countries throughout the world, including England, France, Germany, Poland, Sweden, Switzerland and the United States. Gliding and soaring contests became important national and international events. Soaring was to have been a part of the 1940 Olympic games scheduled to be held in Finland; in anticipation of this event, an international committee met in 1938 and 1939 and selected a German designed glider, the DFS Meise, as the official Olympic sailplane.

At the onset of war in Europe in Sept. 1939, the major glider records for both singleplace and multiplace gliders were as follows: distance—465 mi., established July 6, 1939, by O. Klepikova in the U.S.S.R.; altitude—22.434 ft. reached by E. Ziller in Germany; and duration—50 hr. and 26 min. attained by A. Bodecker and Z. Zander in Germany.

During World War II, gliding and soaring ceased as a sport completely in England, France and Poland, but continued in Sweden, Switzerland and the United States. In contrast, however, Germany encouraged gliding and soaring, and a new world duration record of 53 hr. and 52 min. was established by E. Jachtman on Sept. 23–24, 1944.

In 1941, gliders emerged as a military weapon with the invasion by Germany of Belgium and Crete by glider borne troops. With feverish activity, both England and the United States designed and built huge gliders. The U.S. army glider, CG-10, designed and built by Laister Kauffmann Aircraft corporation, was representative of the larger ones. The wing span was 105 ft. and it was capable of carrying 42 fully equipped soldiers. Military gliders were used by the United Nations in the invasion of Sicily, Burma, Normandy, Southern France and the Netherlands. In Germany, gliders were used not only for troop carriers but also as a means of investigating and testing aerodynamic problems. They were utilized in the developing of reaction-propelled military aircraft.

During this period, the Soaring Society of America was the only active glider organization outside Germany. A new national altitude record of 19,434 ft. was established July 18, 1943, by J. Shelly Charles. Pilot regulations were changed by the Civil Aeronautics administration, permitting glider flights to be credited toward a power plane

licence. Two technical conferences were conducted in 1944 and 1945 at the Polytechnic Institute of Brooklyn. "C," Silver "C" and Golden "C" awards were issued.

With the end of the war in Europe in 1945, the French resumed their gliding and soaring activities and during that summer and fall established two new French national records: distance to a fixed destination—229.9 mi.; distance with return—124.3 mi.

In England, gliding clubs resumed their flying activities, and the British Gliding association was reactivated March

Shaven "Apaches" of the U.S. 194th glider infantry regiment at a briefing prior to the airborne invasion of Germany in March 1945. Not a single aircraft transporting troops was lost in the operation



1, 1946. There was general agreement among the British gliding pilots that a national contest in 1946 was not advisable, and that British gliding activities should concentrate in 1946 on technical and research problems.

In Australia the Sydney Soaring club started operations and during Dec. 1945 reported soaring flights ranging from 50 to 200 mi. and altitudes from 4,000 to 11,600 ft. In Argentina, a new national distance record of 262.5 mi. was established on Jan. 6, 1946.

In the United States, the government weather bureau employed gliders in its 1946 research program investigating thunderstorms. The United States by this action became the only other country beside Germany to recognize the contributions of gliding and soaring to science. The Soaring Society of America organized the first postwar national contest, Aug. 3 to 18, 1946. At this contest poor weather prevailed which before 1937 would have meant virtually no flights. The distances flown ranged up to 187 mi., and altitudes were reached up to 14,400 ft. A new national distance-and-return record of 100 mi. was established. (See also AVIATION, MILITARY.)

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Glucose

See CHEMISTRY.

G-Men

See Federal Bureau of Investigation.

Goebbels, Josef

Goebbels (1897-1945), German propagandist, was born Oct. 29, 1897, at Rheydt in the Rhineland. Goebbels, a cripple from birth, was educated at Heidelberg university and was an early convert to national socialism (1922), becoming district leader (Gauletter) of the party for Berlin in 1926. He founded the nazi party paper, Der Angriff (The Attack) in 1927. After Hitler's advent to power in 1933, Goebbels received the newly-created post of reich minister of propaganda and public enlightenment. He was phenomenally successful in indoctrinating the entire nation with Hitler's ideas. The German press, radio and every other possible outlet for public information were under his strict control. After the period of great German victories in World War II had ended, Goebbels employed the channels of public information to prop sagging German morale.

Goebbels was believed to have remained in the reich chancellery with Hitler during the paroxysmic "last stand" in Berlin in the spring of 1945. A soviet communique of May 3, 1945, quoting a deposition by Hans Fritsche, an assistant of Goebbels who was captured by the soviets, said that Goebbels had committed suicide.

Goering, Hermann Wilhelm

Goering (1893–1946), German reichsmarshal and political leader, was born at Rosenheim, Bavaria, on Jan. 12, 1893. During World War I he commanded the famed Richthofen squadron in the German air force after Richthofen's death. He was an early member of the nazi party and became air minister and minister of the interior in 1933 upon Hitler's accession to the chancellorship.

In Jan. 1940 Goering was appointed head of the eco-

nomic general staff, and in July Hitler conferred upon him the newly created title of marshal of the reich. In July 1944 he was also named mobilization director. Responsible for the building up of the air force, in control of Germany's economic life and manpower, designated first choice as successor to Hitler and personally one of the world's greatest industrialists and richest men, Goering was generally regarded as second man in Germany during World War II. Immediately before the German defeat, however, he was accused by Hitler of "disloyalty" and removed from all his posts.

Goering surrendered to the U.S. 7th army on May 9, 1945. Three days later he was indicted as a war criminal by the United Nations War Crimes commission; it was charged that he was one of the chief instigators of the nazi plan to build a greater Germany by ruthless aggression, and that he was implicated in the mass murders of Jews and foreign slave labourers. Goering remained an adamant nazi throughout the trial. Convicted and sentenced to death, he cheated the gallows by swallowing a vial of potassium cyanide in his cell at Nuernberg prison on Oct. 15, 1946, two hours before his scheduled hanging.

Gold

The decade 1937-46 witnessed sweeping changes in the role played by gold in the foreign exchanges, in its production and in its international movements.

Most of the leading commercial nations of the world had been compelled, under the impact of the depression of 1929-32, to abandon the rigid gold standard to which they had returned in the 1920s. In April 1932, however, Great Britain adopted a "flexible" gold standard, the central feature of which was an equalization fund, designed to stabilize the pound sterling and at the same time insulate the British economy against the monetary effects of exports and imports of gold. The United States adopted a variation of the British technique in 1934 after devaluating the dollar, and by the end of 1936 France, Belgium, Switzerland and the Netherlands had turned to this managed type of gold standard, with the axis nations electing to cling to the techniques of exchange controls and barter agreements. With the coming of World War II in 1939, however, the Tripartite agreement on which this newest experiment with the gold standard rested was declared inoperative for the dura-

Catherine the Great was once asked what she regarded as the most important three requirements for making war. She replied: "Gold, more gold and still more gold." The decade 1937-46, however, emphasized that modern war was too big to be financed by a "war chest," however large. Modern war was a war of mobilization and production, in which gold played a comparatively minor role and in which the mining of that metal was found to be a luxury in the light of wartime manpower shortages and of the greater strategic importance of other metals, such as copper, lead and zinc. There was no mystery, therefore, in the fact that gold production in those countries reporting figures monthly showed a decline from \$1,297,000,000 in 1940 to \$645,000,000 in 1945, or slightly more than 40%.

The most spectacular feature of the decade with respect to gold, however, was its wholesale migration to the United States from nearly every corner of the world, a movement which was interrupted only during the two years, 1944-45. That interruption was caused by the operation of lend-

lease, under which the United States treated most of its imports as ordinary exchange transactions and the bulk of its exports as contributions to the war effort. This created an anomalous situation in which, although physically the United States had the largest export balance in its history, its balance in terms of foreign exchange was actually negative. The unprecedented flow of gold to the United States began as early as 1934 following the reduction in the official valuation of the dollar in terms of gold to 59% of its former level, a figure at which, it was generally agreed, it was undervalued. By the beginning of 1937 this movement had already reached a total of \$3,990,000,000, but that was only a beginning.

Gold fled to the United States for a variety of reasons between 1934 and 1943. It moved there in payment for war materials by Japan, and later, by the British government, because European nationals were fearful for the safety of their possessions during the years when the war clouds were gathering over the continent, and because European governments, in the months when Adolf Hitler was carrying everything before him, were frantically seeking to place their gold reserves beyond the conqueror's grasp. The tide reached its crest in 1940, when imports of the metal by the United States reached \$4,745,000,000, a figure roughly equivalent to the nation's entire gold stock before the devaluation of the dollar. Before the movement spent itself, it had added \$18,700,000,000

Table I.—World Movement of Gold, 1937-46 (As shown in U.S. statistics) (000,000s omitted)

			Net imports	Changes in earmarking	U.S. gold output	U.S. gold stocks	Increase in gold stocks
1937			\$1,586	\$-200	\$168	\$12,760*	\$1,503
1938			1,974	-334	178	14.512	1.752
1939			3,574	-534	196	17,644	3,132
1940			4,745	-645	210	21,995	4,351
1941			982	-408	209	22,737	742
1942			316	-458	131	22,726	-10
1943			69	-804	49	21,938	-789
1944			845	-460	36	20,619	-1.319
1945			-106	-357	33	20,065	-554
1946			295†	3821	53	20,4701	4051
			\$12 500	3 818	\$1.262	\$20,470	40 010

the huge gold reserve of the United States. Table I shows the world movement of gold during the decade 1937-46 as reflected in the statistics of the federal reserve board.

(E. H. Co.)

Production.—The totals for world production of gold could only be approximated during the decade 1937–46, because of the lack of data from the U.S.S.R. and Japan. Productions are shown in Table II for all countries with known outputs amounting to more than 250,000 oz. a year. The 15 countries listed accounted for more than three-quarters of the total output, while the unknown soviet and Japanese outputs made up about the same proportion of the remainder. Although gold production was regularly reported from 70 other sources, the outputs were small, both individually and in the aggregate.

Gold production was one of the few mineral industries which did not suffer a sharp decline during the depression years of the 1930s and so went into the period of World War II with a long record of increasing output, extending from the slump following World War I. The former record high of 1915 was surpassed in 1932, and in each successive year from then until a new world record was established in 1940. Although the decline in world output was moderate in 1941, it became so pronounced in the succeeding years that by 1945 the decline from the 1940 high amounted to 46%. Few countries escaped participation in the decline, for one reason or another. Areas in volved in active fighting naturally suffered the worst, but

few countries in the fighting zones were producers of importance. In other areas shortage of manpower, equipment and supplies were the major factors aftecting output. In some cases, as in the United States and Canada, production of gold was purposely restricted, in order that labour and materials might be diverted to the production of the base metals required in the war program. Even where there was no official restriction of gold output, labour drifted to other work where war demand had increased wages; worn-out equipment could not be replaced; and

needed supplies were diverted to more essential uses. Small producers in remote areas, where production methods were still more or less primitive, suffered relatively less than those whose operations had been more highly mechanized.

On the whole, war conditions put gold output back to somewhat less than the 1932 production, but there was considerable difference in the degree to which various producing countries were affected. As compared with the decline of 46% in world production from the peak year to 1945, operations in Korea and the Philippines were practically entirely stopped, as both were in fighting areas; in the United States, production dropped 81%, in Australia 61%, Chile 52%, Canada 50% and Mexico 49%, while the Gold Coast met the world average of 46%. India showed a decline of 49% after 1937, an acceleration of a trend which had been under way since World War I. Among those countries which were able to maintain opera-

Crated gold bullion arrived in great quantities at New York city from Europe in Aug. 1939, shortly before the outbreak of World

		(The	ousands of f	fine ounces)					
	1937	1938	1939	1940	1941	1942	1943	1944	1945
United States	4,112	4,245	4,621	4,863	4,832	3,583	1,381	1,022	929
Canada	4,096	4.725	5,094	5,311	5,345	4,841	3,651	2,923	2,662
Mexico	846	924	842	883	800	801	632	509	449
Brazil	200?	217	253	264	235	229	191	1787	178?
Chile	273?	318	369	374	278	254	270	244	180
Colombia	442	520	<i>5</i> 70	632	656	597	566	554	50 7
Peru	2057	260	267	281	285	258	200	175	180
Belgian Congo	433	473	552	555	561	500	453	400	381
Gold Coast	559	675	793	886	885	784	565	534	475
South Africa	11,735	12,161	12,822	14,097	14,408	14,121	12,800	12,277	12,214
Southern Rhodesia	804	814	796	826	790	760	657	593	568
India	331	321	315	289	286	260	252	228	1708
Korea	735	948	844	947	753	760	490	657	10
Philippines	717	903	1,040	1,140	1,144	159	14		* *
Australia	1,381	1,592	1,646	1,644	1,497	1,154	751	658	6358
Total	35,620	37,850	40,040	42,270	40,160	35,400	29,300	27,070	23,930
	Table III	Data of	the Gold I	ndustry in th	a United S	tatar			
	, able III			•		14143			
		(Th	ousands of	fine ounces)	1				
	1937	1938	1939	1940	1941	1942	1943	1944	1945

Table II.---World Production of Gold

Table III.—Data of the Gold Industry in the United States (Thousands of fine ounces)															
							1937	1938	1939	1940	1941	1942	1943	1944	1945
oduction (mine)							4,118	4,267	4,673	4,870	4,751	3,457	1,364	998	955
ports							46,615	56,556	102,133	135,699	28,070	9,022	2,908	3,252	2,678
ports							1,315	168	15	143	. 2	. 3	939	27,407	5,713
dustrial use							1,132	862	1,108	1.177	1.942	2.164	2.768	3.514	3,998
econdary recove	ry						1.040	871	895	796	885	813	301	734	885
et consumption .							92	-9	213	380	1,057	1,351	2,467	2,780	3,113
easury stocks .									504,100	627,300	649,600	649,300	626,800	589,100	573,300

tions at a rate better than the world average, Peru declined 37%, Brazil 33%, Belgian Congo 32%, Southern Rhodesia 31% and Colombia 23%. The best record of all was made by South Africa, with a drop of only 15%; this small decline for the largest producer, which accounted for more than a third of the total output of the decade, was the largest factor in preventing a world decline of even greater proportions.

United States.—Gold production in the United States reached a peak in 1940 and suffered only a minor break in 1941, even though labour was being lost to defense industries. The real impact of the war on the industry was not lelt until 1942. Early in that year, gold mines were excluded from priority benefits. Losses of manpower became more pronounced and on Oct. 8, 1942, limitation order L-208 became effective; the mining of gold was banned except insofar as it accompanied the base metals needed for the war program. Lode mines producing less than 100 tons of ore monthly, or placer mines handling less than 100 cu.yd. of material monthly were also exempt



from the order. Enforcement of the order resulted in a 25% drop in 1942, followed by others of 61% in 1943, 26% in 1944 and 9% in 1945, all of which combined to give a decline of 81% from 1940. The purpose of the limitation was to free labour and equipment for the more vitally needed base metals. It was argued on the one hand that with gold demonetized, it was useless in financing the war program, and hence it was a waste of manpower to dig gold out of one hole in the ground, only to bury it in another. On the other hand, it was contended with equal vigour that the government continued to support gold mining in other countries by buying their output, and that the order singled out for drastic action only one of a large group of industries which could be regarded as equally nonessential. The order did result in hardship and losses in the industry; that it had been at least in some degree unjustified was recognized in 1946, when measures were taken to recompense the mines for financial losses.

The restriction order was rescinded, effective July 1, 1945, but recovery in output was delayed for several months while the mines were being put back into working condition, equipment was being rehabilitated or replaced, and the necessary labour force was being recruited. There was only a minor increase in output in the second half of 1945-55% of the year's total, against 45% in the first half. While the June 1945 output of 67,995 oz. had increased to 98,328 oz. in November, there was a recession of output to a low of 84,226 oz. in Feb. 1946, and it was not until May that the November rate was exceeded. The beginning of real improvement in output came with 113,-373 oz. in May 1946, advancing to 177,240 oz. in September, but declining to 152,956 oz. in October. The total for the 10 months—1,216,289 oz.—was at an annual rate of 1,460,000 oz.

Canada.—Gold production in Canada followed much the same pattern as in the United States, but to a lesser degree; output decreased only 50% from the high of 1941. There was some governmental limitation of activity, but nothing so drastic as in the United States, and official limitations probably led to not much if any more reduction than the natural causes—shortage of labour and rising costs. Improvement in output started at midyear of 1945, but was slower than in the United States; production in 1946 was 3,214,377 oz., 19% more than that of 1945.

South Africa.—Gold mining continued to fill such a large place in the general economy of South Africa that operations were maintained as well as existing conditions would permit. Even so, production suffered a decline of 15% from 1941 to 1945, largely because of shortages of labour and supplies and rising costs.

(See also Exchange Control and Exchange Rates; Federal Reserve System; Mineral and Metal Production and Prices.) (G. A. Ro.)

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Gold Coast

See British West Africa.

Golden Gate Bridge

See BRIDGES.

Golden Gate International Exposition

See FAIRS, EXHIBITIONS, EXPOSITIONS.

Gold Standard

See Exchange Control and Exchange Rates; Gold.

Golf

Golf, growing in U.S. popularity until it was pressing hard on the heels of baseball and football in the race for public favour, sustained a body blow when the United States entered World War II in 1941, calling a halt that lasted four years. No other major sport was hit so hard, what with gasoline rationing, restrictions in the use of rubber and steel for manufacturing balls and clubs and manpower shortages.

In the period from 1937 until Pearl Harbor the game was just beginning to regain the momentum it lost through the retirement of Bobby Jones from the golfing scene. Then came the war and the stoppage of all major championships save one for four years. But in 1946, with most if not all of the stars mustered out of service, the game rebounded to such an extent that the season deserved to be rated the greatest in history to that date.

Prior to Pearl Harbor.—The year 1937 saw brawny Ralph Guldahl, a Texan, set a new record of 281 in winning the U.S. open championship over the Oakland Hills course in Detroit, Mich., eclipsing the 282 mark made by Tony Manero at Baltusrol (N.J.) in 1936, and the American Ryder cup pro team registered its first triumph on British soil. The year also saw Johnny Goodman of Omaha, Neb., win the U.S. amateur at Portland, Ore., the first time the event had been staged in the Pacific northwest. Goodman thus became the fifth golfer to win both the amateur and open titles, others being Bobby Jones, Chick Evans, Francis Ouimet and Jerry Travers. Goodman beat Ray Billows of Poughkeepsie, N.Y., in the final. The U.S. women's crown went to Mrs. Estelle Lawson Page of Chapel Hill, N.C. Byron Nelson won the masters tourney at Augusta, Ga., by picking up 6 strokes on Guldahl in 2 holes, playing the par 3 No. 12 and the par 5 No. 13 in 2-3 as against Guldahl's 5-6. Nelson also annexed the \$12,000 Belmont, Mass., open, richest U.S. pro tourney up to that time. Honours in the pros' championship (the Professional Golfers' association) in 1937 went to Denny Shute, who defeated Harold (Jug) Mc-Spaden on the 37th green of the Pittsburgh Field club.

Bob Sweeny, U.S.-born Londoner, won the 1937 British amateur, while Henry Cotton gained top honours in the open for the second time. Jessie Anderson, daughter of a pro, attained the British women's title by defeating Doris Park, also a pro's daughter, in the first all-Scottish final in the history of the championship. Although a victory in the Canadian open was his only national success in a decade of brilliant golf, Harry Cooper won the Vardon trophy in 1937, emblematic of the year's superiority among the pros by maintaining an average of less than 72 strokes per round in 25 tournaments.

The chief legislative act of 1937 was the adoption of a rule by the U.S. Golf association limiting the number of clubs a player could carry in his bag to 14; the edict went into effect on Jan. 1, 1938.

Perhaps the most notable occurrence in golf in 1938 was the defeat sustained by the U.S. amateurs in the Walker cup match at St. Andrews, Scotland, marking the first British success in that event. The U.S. women's team, however, turned in a victory over the British in the Curtis cup match.

Guldahl repeated in the U.S. open and also won the

Western open for the third year in succession. Willie Furnesa, whose six brothers were well-known pros in the Metropolitan (N.Y.) district, emerged with the U.S. amateur crown by defeating B. Patrick Abbott of Hollywood, Calif., a former public links champion, 8 and 7, at the Oakmont Country club, Pittsburgh, while Patty Berg, 20-year-old University of Minnesota student, turned the tables on Mrs. Page in the finals of the U.S. women's championship at the Westmoreland club, Wilmette, Ill., the margin being 6 and 5.

In Great Britain Reginald Whitcombe, member of a distinguished golfing family, won the 1938 British open; Mrs. Andrew Holm gamed her second victory in the women's (she won in 1934 also); while Charley Yates of Atlanta, Ga., a protégé of Jones, captured the British amateur, fifth U.S. representative to accomplish the feat (others were Walter Travis, 1904; Jess Sweetser, 1926; Jones, 1930; and Lawson Little, 1934–35).

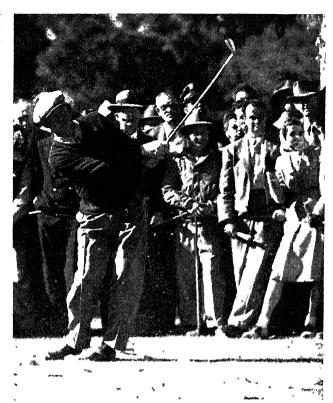
The year 1938 also marked the advent of Sammy Snead, destined to become one of the greatest professionals in the game's history. Although he failed to win any major honours during that year, Snead's prodigious drives and his phenomenal scoring gained him the "golfer of the year" crown when he earned approximately \$20,000 in prize money-an all-time record-on the pro circuit. His best showing came in the P.G.A. championship at Shawnee on Delaware, Pa., where he reached the finals, only to be overwhelmed by Paul Runyan by 8 and 7, the most onesided margin in the history of the tournament. Outdriven by tremendous margins, often to the extent that he had to use brassies and spoons for his second shots whereas Snead was able to get home with medium, even short, irons, Runyan gave one of the greatest exhibitions of wooden club play ever witnessed.

Henry Picard won the 1938 masters at Augusta, Ga., with a score of 285.

The outstanding figure in golf during 1939 was Marvin (Bud) Ward of Spokane, Wash., who, in addition to capturing the U.S. amateur, came within a stroke of tying in the open. In the amateur played at the North Shore club, Chicago, Ward beat Ray Billows who, for the second time in g years had to be content with runner-up honours as he lost, 7 and 5. In the 1939 open at the Philadelphia Country club, West Conshohocken, Pa., he finished only a stroke out of a tie despite his 55 on two of the par 3 holes in the final round. That was the championship in which Snead, with victory almost in his grasp, finished with an 8 on the par 5 home hole—an easy one for him—when a par would have given him the crown by one stroke. As it was the event ended with Nelson, C. Wood and Denny Shute deadlocked for the lead with scores of 284. Nelson won after a double play-off.

An attack of appendicitis prevented Miss Berg from defending her laurels in the U.S. women's of 1939, and honours in that event went to Betty Jameson, sturdy Texan from San Antonio. In the field at the Wee Burn club, Noroton, Conn., was Pam Barton, holder of the British women's title who had gained the U.S. championship at the Canoe Brook club, Summit, N.J., in 1936. Charlotte Glutting, one of the New Jersey stars, climinated the British star after an extra-hole match in the quarterfinal round. The event was given additional international flavour by the presence of Jean Crocker, South American champion, but she, too, lost in an extra-hole match; Betty Hicks, 18-year-old Californian, destined to win the title two years later, beating her. In the final, Miss Jameson defeated Dorothy Kirby of Atlanta, 3 and 2.

Henry Picard sank a seven-foot putt on the first green



Byron Nelson shooting from the edge of the eighth fairway at the open tournament in Los Angeles, Calif., during Jan. 1946. Nelson won the tournament with a total of 284 strokes

at the Pomonok club, Flushing, L.I., to beat Nelson in the extra-hole final of the P.G.A. in 1939, and Guldahl accounted for the masters with a total of 279, low score for the tourney, to Snead's 280.

In Europe, where the clouds of war were gathering, Alex Kyle won the British amateur, while a comparative unknown, Richard (Dick) Burton, captured the 1939 open crown, his 71 on his final round giving him a one-stroke edge on Johnny Bulla, U.S. invader who had finished the test on the St. Andrews course with a total of 282.

The Ryder cup match, scheduled for Ponte Vedra, Fla., late in 1939, had to be cancelled because of the war situation; the British P.G.A. was unable to send a team to compete.

With war at hand and Britain fighting for its very life in 1940, two other international competitions listed for that year, the Walker cup and Curtis cup matches, had to be abandoned, along with the three British championships. The United States had not yet been drawn into the conflict, so golf went on as usual in 1940, with Little winning the U.S. open, Richard (Dick) Chapman the U.S. amateur, and Miss Jameson repeating her 1939 triumph in the women's. Little, who had turned pro after winning both the U.S. and British amateurs in 1934 and 1935, gained his first victory as a member of the "play-for-pay" brigade by beating Gene Sarazen in a play-off after the latter's belated rush had gained him a tie with a score of 287. In the play-off Little beat Sarazen, who had been the open champion 18 years before, 70 to 73. Chapman's victory came at the Winged Foot club, Mamaroneck, N.Y., where he beat W. B. (Duff) McCullough, "week-end, business man" golfer from Philadelphia, 11 to 9, in the final. Miss Jameson's victim was Jane Cothran, South Carolina girl, the margin being 6 and 5.



Ben Hogan (right) receiving the Goodall Round Robin golf tournament trophy at Mamaroneck, N.Y., in June 1946

The P.G.A. crown went to Nelson in 1940 as a result of his one up margin over Snead at the Hershey club in Pennsylvania. The 1940 masters went to Jimmy Demaret, another product of Texas. One of the greatest scoring performances in history took place during 1940 when Wood won the Metropolitan (N.Y.) open with a score of 264 on the par 70 Forest Hill Field club course in New Jersey.

Perturbed by the amount of "backspin" the touring pros were getting, the U.S.G.A. adopted new specifications concerning the "scoring" of club faces, the new rules to become operative on Jan. 1, 1942.

Wood, persistent runner-up in major golf events, managed to shake his hoodoo in 1941 when he added the U.S. open crown to one he had gained earlier, the masters. Ward regained the amateur title he had previously won in 1939 by beating "Pat" Abbott in the 1941 final, the match being marked by considerable bad feeling and played before an ill-behaved gallery at the Omaha Field club. Mrs. Frank Newell, the former Miss Hicks who had figured so prominently in the championship at Wee Burn two years before, gained the 1941 U.S. women's title by defeating Helen Sigel of Philadelphia in the final at the Country club of Brookline, near Boston. Vic Ghezzi captured the 1941 P.G.A. championship after a 38-hole match with Nelson at Denver. Wood's triumph in the masters made up for his misfortunes in the first two that were held. In 1934 he had the tournament practically won, only to have Horton Smith come along and drop a 20-ft. putt on the next to last green and eke out a one-stroke victory. Then, in 1935, Sarazen, 3 strokes behind, playing the No. 15 hole in the last round, had holed out a 220-yd. spoon shot for a double-eagle 2, enabling him to finish in a tie with the Winged Foot pro, whom he then beat in a play-

A total of 2,816 players entered the 1941 U.S. public links championship, a record entry for any event up to

that time. Another record was set when purses amounting to more than \$200,000 were put up as prize money for the pros. Five new names were voted during the year into the hall of fame that had been created with Jones, Francis Ouimet and Sarazen as the first recipients of that honour. The names added were those of Evans, Travers, J. J. McDermott, Alex Smith and Willie Anderson.

War and Eclipse.-Champions crowned in 1941 were destined to hold their laurels for several years when golf, or at least championship golf, was halted by the Japanese attack on Pearl Harbor on Dec. 7 that year. It was only a few weeks afterward, at its annual meeting in 1942. that the U.S.G.A. called off all its championships with many other golf bodies following suit. The only major tournament held in 1942 was the P.G.A. championship, which Snead won by defeating Corp. Jimmy Turnesa, on leave from Fort Dix, N.J., after the latter had scored triumphs over Ben Hogan and Nelson in successive rounds. The only other competitions of note were the Hale America, a charity event that was a sort of unofficial U.S. open, at Chicago; the masters and the All-American. Golf's "Mighty Atom" Hogan, captured the Hale America with a score of 271, lowest total ever scored in a competition of such magnitude. Nelson won the masters for the second time (his other win was in 1937), by picking up 8 strokes on Hogan on the last 36 to gain a tie and win on the play-off. Here again he had to wage an uphill battle. Hogan had a 3-stroke lead for the first 5 holes, but Nelson made up the deficit on the next 11 despite the fact that "Beltin' Ben" travelled at a one-under-par clip over that distance. Nelson also repeated in the 1942 All-American. beating Clayton Heafner in a play-off after both had posted 280 totals. Hogan, however, gained the Vardon trophy for the third successive year in 1942 and also topped the pros in prize-winnings, his "take" being \$13,143.

Golf was cramped more than ever in 1943, with even the P.G.A. abandoned. The pros, though their ranks were greatly thinned, continued their touring activities, tying them in with the war effort by bond-selling endeavours, and later staging successful campaigns to raise funds to provide golfing facilities at veterans' hospitals throughout the country. The only event of consequence played in 1943 was the All-American at Tam O'Shanter, where Harold (Jug) McSpaden won by defeating William (Buck) White, Mississippi pro, in a play-off after a tie at 282.

As only one example of what golf did to justify itself during wartime, the Chicago District Golf association, sponsor of the Victory cup tournament, raised \$137,639.37 over a five-year period and turned it over to such war charities as the United Service Organizations, Red Cross and Army and Navy Relief.

Professional golf went on a "spree" in 1944, the P.G.A. not only reviving its championship, abandoned the year before, but arranging the biggest schedule from the standpoint of prize money in its entire history. Chief beneficiary was Nelson, whose winnings of \$46,766 in war bonds more than doubled the record of \$19,554 made by Snead in 1938. To Nelson went the added honour of being named the year's outstanding sports figure in the Associated Press's annual poll.

While most of the top-notch pros were in service—Snead, Hogan, Demaret, White, Victor Ghezzi, Lloyd Mangrum, Jimmy Thomson, Little, E. J. (Dutch) Harrison, Heafner, to mention only a few—Nelson and McSpaden, exempted on grounds of physical disability, had a harvest. Between them they won 12 of the 22 tournaments that were staged, Nelson accounting for 7 and McSpaden 4. They also teamed together to win a 4-ball event at Minne-

apolis, setting up a record by playing 7 rounds in 64 under par. Nelson's only major failure came in the P.G.A. championship in which he lost, one down, to Bob Hamilton, obscure Indiana pro whose only claim to fame was the winning of the North and South open at Pinehurst, N.G. The triumph that put Nelson on the way to his money-winning record was his victory in the All-American open, where first money was \$13,462.50 in war bonds or the equivalent of \$10,100, largest single cash prize ever offered.

There were no amateur tournaments of note in 1944, but Dorothy Germain, 20-year-old Philadelphian, won the women's western amateur title for the second year in succession and Lieut. Patty Berg and Mrs. Mildred (Babe Didrikson) Zaharias did well in professional competitions for women.

In 1945 the story of golf again was chiefly that of one man and one organization, the man, Nelson, the organization, the P.G.A. Competing in 31 of the 40-odd tournaments staged by the P.G.A., Nelson finished first in 19 of them. By the end of the year his prize-winnings had reached the total of \$60,600 in war bonds, breaking all previous marks.

His chief triumph came in the P.G.A. championship, which he won for his second time by beating Sam Byrd, one-time Yankee outfielder, 4 and 3, at the Morain Country club, Dayton, O. In addition he annexed the Canadian open, revived after a two-year blackout, with a score of 280, and also annexed the All-American open at Tam O'Shanter for the fourth time in its 5-year history with a score of 269, 19 under par. His all-time earnings in this tournament alone amounted to \$26,975 in actual cash, top money in 1945 being \$14,200 in war bonds.

In the course of the greatest winning streak ever attained by any player, Nelson won 11 straight tournaments before he was finally checked by Fred Haas, Jr., New Orleans amateur, at Memphis, Tenn. Subsequently two other amateurs, Lt. Cary Middlecoff and Frank Stranahan bested the pros in the Pinehurst's centennial event and in the Durham, N.C., open.

Nelson also established a new P.G.A. scoring record in the Scattle, Wash., open with a score of 259, his rounds being 62, 68, 69, 66, 21 under par, for a new world's record for a par 70 course.

Shortly before, Hogan, returning to competition after three years in the air force, won the Portland, Ore., open with a total of 261, his rounds being 65, 69, 63, 64. In a way this was a greater performance than that of Nelson's for it was accomplished on a par 72 course. Nelson's average for the year was 68.33, almost a stroke below the mark he set in 1944. Once again in 1945, Nelson was voted the No. 1 athlete in the Associated Press poll. This was the second year in succession he had received that honour, the second time any athlete had received that distinction. Only one other golfer had ever been named, Sarazen being chosen in 1932.

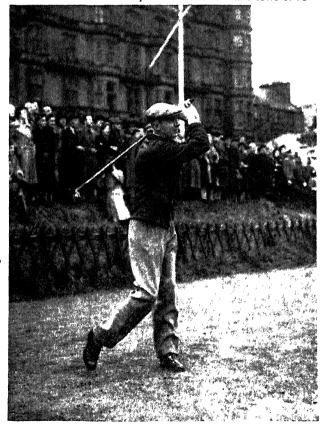
With the war over and golfers returned from far-flung battle fronts, it was almost inevitable that the game should enjoy one of its greatest years in 1946, when all the championships were resumed, after a five-year lapse for most of them. Enthusiasm for the game reached new heights, as shown by the turnouts for the P.G.A. sponsored events and particularly for the U.S. open, first of the U.S.G.A. championships to be played. New attendance records were set at the Canterbury club, Cleveland, where the open was played and where Mangrum, recently mustered-out G.I. with two Purple Hearts to his credit, won after beating Nelson and Ghezzi in a double play-off. With 12,000

on hand for the final day's play, almost double the previous high of 6,859 who watched Bobby Jones round out the third championship of his "Grand Slam" in 1930, the trio wound up in a tie as each turned in a total of 284 for the 72-hole journey, and with 6 or 8 others hard on their heels in the greatest championship finish in history. The three-day total attendance for the event was 27,200, and the gate receipts over that period were more than \$60,000. The best previous marks up to then were 16,365 and \$46,765, the figures at Interlachen (Minneapolis) in 1930.

After one more round the deadlock still was unbroken, all 3 having scored 72s, but another 72 on the second extra round gave Mangrum the title, Nelson and Ghezzi registering 73s. Two "breaks" decided the championship, one coming in the third round when Nelson's caddy accidentally stepped on his ball, costing him a one-stroke penalty; the other being Mangrum's holing of a 70-ft. putt in the final play-off round. Except for that he doubtless would have come in a poor third.

Although attendance at the National amateur at the Baltusrol club in New Jersey later in 1946 was on the slim side, the championship itself turned out to be one of the best, with more first-class golfers on hand than ever before. Remoteness of the club and an unfortunate decision by the U.S.G.A. in drawing the names for the match play accounted for the poor attendance. Many of the topnotchers, including the three favourites—Ward, holdover champion, Stranahan and Capt. Middlecoff—were elim-

Roger Wethered, elected captain of the Royal and Ancient Golf club in 1939 is shown "driving himself into office" in the traditional play from the first tee at St. Andrews, Scotland, in Sept. 1946, after a 7-year delay in "taking office." The play for the Autumn medal was won by Dr. J. C. Lawrie with a score of 78





Patty Berg teeing off during the women's competition at the Tam O'Shanter country club, Chicago, Ill., in July 1943. Miss Berg won the women's event with a score of 307 for 72 holes, over runner-up Betty Hicks (left), then a SPAR

inated early, Ward beating Stranahan in the second round and then being himself eliminated by "Babe" Lind of Denver in the next. Soon thereafter it was Middlecoff's turn to go out and so, by the time the semifinal was reached, the only name player left was Smiley Quick, exnavy serviceman from California, who had previously won the U.S. public links crown, and been runner-up in the Western and Trans-Mississippi amateurs.

The winner was Ted Bishop, elongated New Englander who at one time in his career had been a pro. He beat Quick after a 37-hole match that ended when the Californian missed a 2-ft. putt for a half on the extra hole. In the qualifying test Skee Riegel, an ex-flying instructor from Glendale, Calif., set a new record with a score of 136, clipping 3 strokes off the mark set by Tommy Sheehan at the North Shore club, Chicago, in 1939.

Mrs. Zaharias won the 1946 women's title at Tulsa by overwhelming Mrs. Clara Callender Sherman of California, 11 and 9, in the final. Mrs. Zaharias thus became the outstanding woman golfer of the year as a result of her other triumphs in the All-American and in the women's Trans-Mississippi, with Louise Suggs of Lithia Springs, Ga., a close second.

Hogan was the man of the year among the pros in 1946. Not only did he win the P.G.A. crown, but he also was the year's leading money-winner, his earnings (up to Dec. 9) being \$42,596. In the course of that time he accounted for 13 of the P.G.A.-sponsored tournaments.

The year 1946 was the most successful in the history of the P.G.A., with 45 tournaments on its schedule and prize money an all-time high, \$484,000. The Tam O'Shanter event led with \$45,000; Herman Barron, Metropolitan (N.Y.) pro won that event, collecting \$10,500 in prizes.

Sam Snead won the British open of 1946. Stranahan played in the British amateur and managed to go several rounds before he was eliminated, the title eventually going to James Bruen. The British women's went to a home player, Jean Hetherington.

Evidence of what was to come appeared in the masters tournament at Augusta when an unknown, Herman Keiser, turned up the winner, and in the U.S. public links championship, where the entry list showed 3.585 names, largest ever to sign up for a major golf championship.

(W. D. R.)

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Golikov, Filip Ivanovich

), soviet army officer, joined the Golikov (1900-Red army in 1918. He studied at the Frunze Military academy, was rapidly promoted and later was made deputy chief of the general staff. Regarded as a tank expert, he was decorated for his work in the Russo-Finnish campaign of 1939-40 which had provided him with an opportunity to test his theories on mechanized warfare. In July 1941 he left the soviet union to head a military mission to Great Britain. Following these conferences, he visited the U.S. to discuss lend-lease arrangements. At the end of 1941 he returned to the field of operations to lead one of the seven armies which turned back the nazi tide during the battle of Moscow in the winter of 1941-42. In 1943 Stalin promoted Golikov from army commander to commander of the Voronezh front in the Ukraine. He was responsible for the spectacular, although temporary, recapture of Kursk, Rostov and Kharkov in Feb. 1943.

Appointed director for the repatriation of soviet prisoners in the autumn of 1944, he accused the Allies of mistreating soviet prisoners who, attired in German uniforms, had been captured on the western front and confined in Allied concentration camps. He also charged that the Allies were preventing the repatriation of soviets in the U.S. and British zones of Germany.

Gonads

See ENDOCRINOLOGY.

Goncourt Prize Novel

See LITERARY PRIZES.

Gonorrhoea

See VENEREAL DISEASES.

Göring, Hermann Wilhelm

See Goering, Hermann Wilhelm.

Gorizia

See Trieste; Yugoslavia.

Gort, John Standish S.P.V.

Viscount Gort (1886–1946), British army officer, was born in July, the son of the 5th viscount, and succeeded to the title in 1902. Educated at Harrow and Sandhurst, he joined the grenadier guards as a second lieutenant in 1905. In France at the start of World War I, he was wounded four times and received the Victoria cross.

After the close of World War I, he was assigned to teaching posts in the army staff college and the senior officers' school. Between 1932 and 1936, he served in India as director of military training.

On Dec. 2, 1937, he was named chief of the British imperial general staff.

On Sept. 3, 1939, Viscount Gort returned to France as commander in chief of the British expeditionary forces. The surrender of the Netherlands armies in May 1940, and the rapid retreat of the Belgians placed the British and French in an impossible position. Gort retreated to the Dunkirk region; after establishing bridgeheads protecting the withdrawal area, he succeeded in evacuating nearly 225,000 British and 112,000 French soldiers to England.

On July 19, 1940, Viscount Gort was named inspectorgeneral to the forces of the army's training service and in May 1941, he was made governor of Gibraltar. He was transferred in 1942 to Malta as commander in chief, and on Oct. 31, 1944, he became high commissioner and commander in chief for Palestine and Trans-Jordan. He resigned from that post on Nov. 2, 1945, and was made field marshal on Jan. 1, 1943. He died in London, March 31, 1946.

Gouin, Félix

Gouin (1884—), French statesman, was born Oct. 4, 1884, in Peypin, Bouches-du-Rhône department, France. After studying law in Aix, he was admitted to the bar in 1907. Following World War I, during which he served as a private in the army, Gouin was elected in 1924 to the chamber of deputies on the Socialist ticket and was reelected in 1928, 1932 and 1936. After the collapse of France in 1940, he stood with the 80 members of parliament headed by Edouard Herriot and Jules Jeanneney who refused to accord Marshal Pétain the dictatorial powers he had asked for. He was one of Léon Blum's lawyers at the Riom trials.

Félix Gouin, elected president of the provisional government of France on Jan. 23, 1946, is shown announcing the composition of his newly formed coalition cabinet to members of the press



In Aug. 1942, Gouin fled to England, joined Gen. de Gaulle and held a number of important posts in the Free French movement.

After the liberation of France, he was elected to the provisional assembly in Nov. 1944 and in Oct. 1945, he was elected president of the assembly, obtaining 512 out of 543 votes. Although a right-wing Socialist, he was acceptable to the Communists as a compromise candidate during the crisis caused by De Gaulle's resignation as president of the provisional government, Jan. 22, 1946, and the assembly elected him as the general's successor by a 407 to 55 vote.

Gouin's task of harmonizing the frequently disparate policies of the three major parties represented in the government—Mouvement Républicain Populaire (M.R.P.), Socialist and Communist—was made doubly difficult by mounting inflationary pressures, food and fuel shortages and insistent labour demands for wage increases to offset the inflationary spiral. On foreign policy, the M.R.P. and Socialists backed the western, the Communists the eastern, powers. All three parties, however, lauded Gouin's insistence on a prolonged Allied occupation of the Reich and internationalization of the Ruhr. After the election of the new constituent assembly, Gouin resigned, June 11, 1946 and was succeeded by Georges Bidault. Gouin was given the post of vice premier in the Bidault government formed June 24, 1946.

Gout

See ARTHRITIS.

Gouveia, Teodosio Clemente de

Cardinal Gouveia (1889—), archbishop of Lourenço Marques, Portuguese East Africa, was born at Sao Jorge, Madeira, on May 13, 1889. He was ordained to the priesthood in 1919, elevated to bishop of the titular see of Leuce in 1936 and named archbishop of Lourenço Marques in 1941. To secure funds for a new cathedral, the archbishop had all the historic plate in the episcopal residence sold.

Upon the occasion of the consecration of the cathedral in 1945, he acted as host to the patriarch of Lisbon and twelve apostolic delegates and presided over the impressive ceremonies.

Proclaimed a cardinal by Pope Pius XII on Feb. 18, 1946, he had the distinction of being the only cardinal from Africa.

Government Debts

See DEBTS, NATIONAL.

Government Departments and Bureaus

Following are lists of leading officers of the more important government departments and bureaus of the United States and Great Britain, at various intervals during the decade 1937–46.

United States, Jan. 1938.

· 3		
Department or Bureau	Name	Post
Department of State	Hull, Cordell	Secretary
Department of State	Welles, Sumner	Under-Sec'y
Department of the Treasury	Morgenthau, Henry, Jr.	Secretary
Department of the Treasury	Magill, Roswell	Under-Sec'y
Comptroller of the Currency	O'Connor, J. F. T.	Comptroller
Treasurer of the U.S	Julian, William A.	Treasurer
Bureau of Customs	Moyle, James H.	Commissioner
Bureau of Internal Revenue	Helvering, Guy T.	Commissioner
Bureau of Public Health Federal Alcohol Administration.	Parran, Thomas, Jr.	Surgeon Gen.
Federal Alcohol Administration.	Alexander, W. S.	Administrator
The Coast Guard	Waesche, Russell R.,	
	Rear Adm.	Commandant
Bureau of the Budget	Bell, Daniel W.	Director
Department of War	Woodring, Harry H.	Secretary
Department of War	Johnson, Louis A.	Asst. Sec'y
Chief of Staff	Craig, Malin, Gen.	Chief of Staff

Name
Conley, Edgar T, Maj Gen
Schley, Julian L, Maj Gen
Westover, Oscar, Maj Gen
Cummings, Homer S
Reed, Stanley F
Hoover, J Edgar
Bennett, James V
Farley, James A
Swanson, Claude A
Edison, Charles
Leahy, William D, Adm
Andrews, Adolphus,
Rear Adm
Hart, Thomas C, Rear Adm
Holcomb, Thomas, Maj Gen
Ickes, Harold L
West, Harold
Johnson, Fred W Post Department or Bureau Name Adjutant General
Chief of Engineers
Chief of the Air Corps
Department of Justice
Solicitor General General Chief Chief Att y-Gen Solic Gen Solutior General
Federal Bureau of Investigation
Bureau of Prisons
Post Office Department
Department of the Navy
Department of the Navy
Office of Naval Operations
Bureau of Navigation Director Director Post Gen Secretary Asst Sec'y Chief Chief General Board
Marine Corps
Department of the Interior
Department of the Interior
General Land Office
Office of Indian Affairs
Office of Education
Geological Survey
Bureau of Reclamation
National Park Service Chairman Commandant Secretary Under-Sec'v West, Harold Johnson, Fred W Collier, John Studebaker, John W Mendenhall, W C Page, John C Cammerer, Arno B Finch, John W Wallace, Henry A Wilson, M L Commissioner Commissioner Commissioner Director Commissioner Director Director National Park Service Bureau of Mines Department of Agriculture
Department of Agriculture
Agricultural Adjustment Secretary Under-Sec'y Agricultural Adjustment
Administration
Bureau of Agricultural Economics
Bureau of Animal Industry
Bureau of Chemistry and Soils
Bureau of Entomology
Food and Drug Administration
Forest Service
Bureau of Public Roads
Soil Conservation Service
Weather Bureau
Department of Commerce
Bureau of An Commerce
Bureau of An Commerce
Bureau of An Commerce
Bureau of Foreign and Domes-Administrator Chief Chief Chief Chief Chief Bureau of Entomology
Food and Drug Administration
Forest Service
Bureau of Home Economics
Bureau of Plant Industry
Bureau of Public Roads
Soil Conservation Service
Weather Bureau
Department of Commerce
Bureau of Air Commerce
Bureau of Air Commerce
Bureau of Foreign and Domestic Commerce
National Bureau of Standards
Bureau of Fisheries
Coast and Geodetic Survey
Bureau of Marine Inspection and
Navigation
Patent Office
Department of Labor
Department of Labor
United States Conculiation
Service Chief Chief Chief Chief Chief Chief Chief Secretary Director Director Post Office Dye, Alexander V Briggs, Lyman J Bell, Frank T Director Director Commissioner Vacancy Director Tield R S Director Coe, Conway P Perkins, Frances Commissioner Secretary Asst Sec v Vacancy Kerwin, Hugh L Lubin, Isador Director Service
Bureau of Labor Statistics
Immigration and Naturalization Commissioner Service
Children's Bureau
Women's Bureau
Independent Offices
Civil Service Commission
Interstate Commerce Commission Houghteling, James L Lenroot, Katharine F Anderson, Mary Commissioner Treasury Chief Director Mitchell, Harry B Splawn, Walter M W Eccles, Marriner S Ayres, William A President Chairman Chairman Interstate Commerce Commission Federal Reserve Board Federal Trade Commission United States Tariff Commission United States Board of Tax Chairman War Office Stevens, Raymond B Black, Eugene Manly, Basil McDonald, Stewart Appeals
Federal Power Commission Chairman Chairman Federal Housing Administration Veterans Administration Administrator Hines, Frank T, Gen Abbott, C G Rowe, L S Grayson, Cary T Administrator Secretary Smithsonian Institution Pan American Union
American National Red Cross
Reconstruction Finance Director Chairman Corporation
Finance
Corporation
Federal Home Loan Bank Board
Tennessee Valley Authority
Rural Electrification Adminstration
National Youth Administration Jones, Jesse H Fahey, John H Chairman Chairman Chairman Morgan, Arthur E Carmody, John M Williams, Aubrey Myers, William I Ickes, Harold L Administrator Director Farm Credit Administration Public Works Administration Governor Administrator Chairman Rice, Stuart A Central Statistical Board Central Statistical Board
Federal Emergency Relief
Administration
Works Progress Administration
Emergency Conservation Work
Federal Deposit Insurance Hopkins, Harry L Hopkins, Harry L Fechner, Robert Administrator Administrator Director Corporation
Securities and Exchange
Commission
The National Archives
National Labor Relations Board
Federal Communications Com-Chairman Crowley, Leo T Douglas, William O Connor, R D W Madden, J Warren Chairman Archivist Chairman McNinch, Frank R Altmeyer, Arthur J mission Chairman Social Security Board United States Maritime Chairman Commission Vacancy
United States Housing Authority Straus, Nathan Chairman Administrator Crown Agents for the Colonies . .

Great Britain, Dec. 1937.

Department or Bureau Admiralty, The Board of Agriculture and Fisheries

Name A Duff Cooper Sir R H Archibald Carter W S Morrison Sir Donald Fergusson

Post First Lord Permanent Secretary Minister Permanent Secretary

Post Department or Bureau Air Ministry Viscount Swinton
Col Sir Donald Banks
Burma Office see India Office
Cabinet Office Col Sir Maurice Hankey Secretary of State Secretary 1st Commissioner Secretary of State Perm'nt Under-sec'y Cabinet Office
Civil Service Commission
Colonial Office Sir Roderick Meiklejohn
W Ormsby Gore
Sir Cosmo Parkinson Crown Agents for the Sir W F Gowers H C Thornton J E W Flood Colonies Commissioners of Crown Lands The Minister of Agriculture and Fisheries (ex officio)
C L Stocks Commissioner Perm'nt Commissioner Customs and Excise, Sir G Evelyn P Murray Chairman Board of Committee of Imperial Defence Chairman
Deputy Chairman and
Minister for Co ordination of Defence The Prime Minister Sir Thomas Inskip Secretary
Secretary of State
Perm'nt Under-sec'y
Chancellor
Vice-chancellor Col Sir Maurice Hankey Malcolm MacDonald Sir Edward Harding Earl Winterton Dominions Office Duchy of Lancaster Sir John Bennett Earl Stanhope M G Holmes

Foreign Office

M G Holmes
Anthony Eden
Sir Robert Vansittart
(Appointed Jan 1 1938, Chief Diplomatic Adviser to the Foreign Secretary, succeeded as Permanent Under-secretary by Sir Alexander Cadogan)
Health, Ministry of
Home Office
Sir Samuel Hoare, Bt
Sir R R Scott
India Office
Marquess of Zetland
Sir Findlater Stewart
Inland Revenue Board of Sir Edward R Forber
Labour, Ministry of
Labour, Ministry of
Ernest Brown
Sir T W Bir II

Patent Office

Revenue Board of Sir Edward R Forber
Ernest Brown
Sir T W Bir II

Patent Office

Revenue Board of Sir Edward R Forber
Ernest Brown
Sir T W Bir II

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Patent Office

Revenue Board of Sir Edward R Forber
Ernest Brown
Sir T W Bir II

Patent Office

Revenue Cachancellor President
Permanent Secretary
Secretary of State
Secretary of State
Perm'nt Under-sec'y
Secretary of State
Perm'nt Under-sec'y
Chairman
Minister

Vice-chancellor
President
Permanent Secretary
Secretary of State
Perm'nt Under-sec'y
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Secretary
Secr Ernest Brown
Sir T W Phillips
M F Lindley Secretary Comptroller-general Patent Office Paymaster General's Office Pensions, Ministry of Lord Hutchison of Montrose

Lord Autension of Monitor Herwald Ramsbotham Sir Adair Hore Maj G C Tryon Sir Thomas Gardiner Viscount Halifax Col Sir Maurice Hankey Privy Council Office The Master of the Rolls
C T Flower
Sir Ernest Fass Public Record Office Public Trustee Office Scottish Office Walter Elliot
Sir Horace P Hamilton
Sir William R Codling Stationery Office, H M Trade, Board of Oliver Stanley Sir William Brown Transport, Ministry of Leslie Burgin L Browett Neville Chamberlain

> Sir John Simon Sir Warren Fisher

Works and Public Buildings Sir Philip Sassoon, Bt Sir Patrick Duff

Paymaster-general Minister Permanent Secretary Permanent Secretary
Postmaster general
Director-general
Lord President
Clerk of the Council
Keeper of the Records
Secretary
Public Trustee Secretary of State Under-sec'y of State Controller President Permanent Secretary Minister Permanent Secretary
Prime Minister and
First Lord
Chancellor of the Exchequer
Permanent Secretary
and Head of H M
Civil Service Leslie Hore-Belisha Sir Herbert J Creedy Secretary of State Perm'nt Under-sec'y

First Commissioner

Secretary

Great Britain, Dec. 1943.

Customs and Excise

Duchy of Lancaster Economic Warfare,

Ministry of

Board of Dominions Office

Post Ministry or Department A V Alexander Sır Henry V Markham Admiralty, The Board of First Lord Permanent Secretary Agriculture and Fisheries, Ministry of R S Hudson Sir Donald Fergusson Minister Permanent Secretary Aircraft Production Sir Stafford Cripps Sir Harold Scott Minister Permanent Secretary Sir Archibald Sinclair Sir Arthur Street Lord Soulbury Sir George T Reid Secretary of State Perm'nt Under sec'y Air Ministry . . Assistance Board . . Chairman Chairman
Secretary
Secretary of State
Perm'nt Under-sec'y
Perm'nt Sec'y and
Sec'y of the War L S Amery Sir David T Monteath Sir Edward Bridges Burma Office Cabinet Office Cabinet Civil Service Commission Colonial Office . A P Waterfield Oliver Stanley lst Commissioner Secretary of State Perm'nt Under-sec'y Sir George Gater Commissioners of Crown Lands . . .

The Minister of Agriculture and Fisheries (ex-officio)
O S Cleverly Commissioner Perm'nt Commissioner

J A Calder }
H F Downie } Crown Agents

Sir Archibald Carter Chairman Secretary of State Perm'nt Under-sec'y Chancellor Viscount Cranborne Sir Eric Machtig Ernest Brown Earl of Selborne Earl of Drogheda

Minister Director-General

President Minister

Secretary Minister

Secretary

Minister

Secretary

R A Butler Sir Maurice Holmes Col J J Llewellin Sir Henry L French Anthony Eden Sir Alexander Cadogan Education, Board of Food, Ministry of Foreign Office . . Fuel and Power, Ministry of

Name

Major Gwilym Lloyd George Minister Sir Frank N Tribe Secretary H U Willink Minister Health, Minner,

Home Office and Ministry

Herbert Morrison
Sir Alexander Maxwell Health, Ministry of

Sir William B Brown

India Office I. S Amery
Sir David T Monteath
Brendan Bracken
C J Radchiffe
Inland Revenue, Board of Sir Cornelius J Gregg Labour and National Service, Ministry of

Ernest Bevin Sir Thomas W Phillips Viscount Simon Lord Chancellor Lord Privy Seal Lord Beaverbrook
Minister without Portfolio Sir William Jowitt

R K Law R G Casey

Lord Moyne

Ben Smith

Tord Cherwell L Cuthbertson Sir Walter Womersley

Viscount Swinton

Harold Macmillan

Sir Alexander Cunnison Capt Harry Crookshank Sir Thomas Gardiner

C R Attlee
E C E Leadbitter
Oliver I yttelton
J H E Woods

Lord Woolton

Norman Brook

W S Morrison

Thomas Johnston

Sir Horace P Hamilton

Sır Andrew Rae Duncan Sır Wıllıam Douglas

Sir Geoffrey Whiskard Hugh Dalton

Sır Arnold E Overton Winston Churchill

Sir John Anderson

Sir Frederick Leith-Ross

Sir Richard V N Hopkins

Sir James Grigg Sir Frederick C Bovenschen } Sir Eric Speed

Lord Leathers Sir Cyril W Hurcomb Lord Portal F P Robinson

Minister of State . . . Minister of State (Cairo)
Deputy Minister of State (Cairo) Minister Resident in W
Africa Africa

Ministry or Department

Minister Resident in N W Africa N W Africa . . Minister Resident in Washington for Supply Paymaster-General's Office

Pensions, Ministry of Post Office . . . Privy Council Office Production, Ministry of

Reconstruction, Ministry

Scottish Office . . . Supply, Ministry of

Town and Country Planning, Ministry of Trade, Board of

Treasury

War Office

War Transport, Ministry of Works, Ministry of

United States, Dec. 1946

Department of State

Department or Bureau

Department of the Treasury

Bureau of Comptroller of Currency
Treasurer of the U S
Bureau of Customs
Bureau of Internal Revenue
Bureau of Narcotics Bureau of the Mint
US Savings Bonds Division
US Coast Guard War Department

Office, Chief of Staff . Women's Army Corps Army Ground Forces

Name Byrnes, James F 1
Acheson, Dean
Cohen, Benjamin V
Benton, William
Thorpe, Willard L
Hilldring, John H
Braden, Spruille
Russell, Donald S
Sayder John W

Snyder, John W Wiggins, A L N Delano, Preston
Juhan, Wilham A
Johnson, W R
Nunan, Joseph D, Jr
Anslinger, Harry J
Ross, Mrs Nelhe Tayloe
Clark, Vernon L
Farley, Joseph F, Adm
Patterson, Robert P.
Royall, Kenneth
Claiborne
Eisenhower, Dwight D.

Eisenhower, Dwight D, Gen of the Army Boyce, Westray Battle, Col Devers, Jacob L, Gen

Post Permanent Secretary Permanent Secretary Secretary of State Perm nt Under-sec'y

Minister Perm'nt Under-sec'y, Home Office Home Office
Secretary, Ministry of
Home Security
Secretary of State
Perm nt Under-sec'y
Minister
Director-General Chairman

(Dealing with postwar reconstruction)

Paymaster-General Asst Paymaster-Gen Minister Minister
Permanent Secretary
Postmaster-General
Director-General
Lord President
Clerk of the Council Minister Permanent Secretary

Minister Secretary
Secretary of State
Permanent Undersec'y of State Minister Permanent Secretary

Minister Permanent Secretary President Chief Economic Adviser to H M Govt Permanent Secretary
Permanent Secretary
Prime Minister, First
Lord and Minister
of Defense
Chancellor of the Exchequer
Permanent Secretary
and Head of H M
Civil Service

Secretary of State
Joint Perm'nt
Under-secretaries

Minister Director General Minister Permanent Secretary

Post

Secretary Under-Sec Counsellor Asst Sec'y Asst Sec'y Asst Sec'y Asst Sec'y Asst Sec'y Secretary Under-Sec'y

Comptroller Treasurer Commissioner Commissioner Commissioner Director Nat'l Director Commandant Secretary Under-Sec'y

Chief of Stan Director Comm'd'g Gen

Immigration and Naturalization Service Post Office Department Department of the Navy

Department or Bureau

Army Air Forces
Department of Justice
Solicitor General
Federal Bureau of

Investigation Bureau of Prisons

Chief of Naval Operations

Bureau of Naval Personnel

Women's Reserve of the US Naval Reserve Bureau of Ordnance

Bureau of Ships

Bureau of Aeronautics

Bureau of Yards and Docks US Marine Corps Headquarters

Women's Reserve of the US Marine Corps Reserve Department of the Interior

Bureau of Land Management Office of Indian Affairs
Solid Fuels Administration
for War for War Geological Survey Fish and Wildlife Service Bureau of Reclamation National Park Service Bureau of Mines Division of Territories and Island Possessions Department of Agriculture

Agricultural Research Administration
Bureau of Animal Industry
Bureau of Agricultural and
Industrial Chemistry
Bureau of Darry Industry
Bureau of Entomology and
Plant Quarantine
Bureau of Plant Industry,
Soils, and Agricultural
Engineering Administration Sons, and Agricultural Engineering Bureau of Human Nutrition and Home Leonomics Office of Experiment Stations Bureau of Agricultural Economics Extension Service Farm Credit Administration Farmers Home Administration I orest Service Office of Foreign Agricultural Relations Production and Marketing Administration Commodity Credit Corporation
Federal Crop Insurance
Corporation
Rural Electrification

Administration
Soil Conservation Service
Department of Commerce Bureau of the Census Bureau of Foreign and
Domestic Commerce
National Bureau of Standards
Coast and Geodetic Survey
Inland Waterways Corporation

Civil Aeronautics Administration Civil Aeronautics Board Patent Office Weather Bureau Department of Labour

U S Conciliation Service Bureau of Labour Statistics National Wage Stabilization National Wage Stabilization Board US Employment Service Retraining and Re-employ-ment Administration Children's Bureau Women's Bureau
Division of Labour Standards
Wage and Hour and Public
Contracts Divisions
Federal Loan Agency

Name Spaatz, Carl, Gen Clark, Tom C Vacancy

Hoover J Edgar Bennett James V

Caiusi Ugo Hannegan, Robert L Forrestal, James Sullivan, John L Nimitz, Chester W, Fleet Adm Denfeld, Louis E, Vice-Adm

Hancock, Joy B Capt Hussey, George F, Jr, Vice-Adm Mills, Earle W Vice-Adm Sallada, H B, Rear Adm

Manning, J J, Rear Adm Vandegrift, Alexander A, Gen

Hamblett, Juha, Maj Krug, Juhus A Chapman, Oscar L Johnson, Fred W Brophy, William A Krug, Julius A Wrather, William E. Day, Albert M Straus, Michael W. Drury, Newton B Sayers, Royd R

Arnold, Edwin G Anderson, Clinton P Dodd, Norris E

Lambert, W V Simms, Bennett T

Howard, L B Reed, Ollie E Annand, P N

Salter, Robert M Stiebeling, Hazel K Taullinger, R W

Wells, O V
Wilson, M L
Duggan, I W
Lasseter, Dillard B
Watts, Lyle F

Wheeler, L A Gilmer, Jesse B

Gilmer, Jesse B Geissler, Gus

Wickard, Claude R Bennett, Hugh H Harriman, W Averell Burden, William Capt, James C

Taylor, Amos E Condon, E U Colbert, Leo O

Trimble, South, Jr

Wright, Theodore P Landis, James M Ooms, C W Reichelderfer, F W Schwellenbach, Lewis B Johnson, Keen Warren, Edgar L Clague, Ewan

Wirtz, W Willard Goodwin, Robert C Erskine, Graves B, Maj Gen Lenroot, Katharine F Miller, Frieda S Beyer, Mrs Clara M

Walling, L Metcalfe Henderson, Charles B

Comm'd'g Gen Att'y-Gen Solic Gen

Director Director Commissioner Postmaster Gen

Secretary Under-Sec's Chief of Naval Operations Chief

Director Chief

Chief Chief Chief

Commandant

Director Secretary Under-Sec'y Act'g Director Commissioner

Administrator Director Director Commissioner Director Director

Director Secretary Under-Sec'y

Administrator Chief

Chief Chief Chief

Chief Chief

Chief Chief Director Governor Administrator Chief

Director Administrator President Manager

Act'g Administrator Act'g Chief Secretary Under-Sec'y

Director Director Director

Chairman of the Board

Administrator Chairman Commissioner Chief Secretary Under-Sec'y Director Acting Commissioner

Chairman Director Acting Administrator Chief Chief Act'g Director

Administrator Act'g Administrator

Resigned effective Jan 8, 1947 Gen George C. Marshall appointed Sec'y

Department or Bureau Reconstruction Finance Henderson, Charles B Schieck, DeWitt C Corporation
U.S. Commercial Company
Rubber Development Corporation Federal National Mortgage Grant, Man L Allen, George I Allen, George I Allen, George L Association
RFC Mortgage Company
War Damage Corporation Miller, Watson B Studebaker, John W Parran, Dr Thomas Federal Security Agency Office of Education Public Health Service Social Security
Administration Altmeyer, Arthur I Food and Drug
Administration
Office of Vocational Dunbar, Paul B Rehabilitation Shortley, Michael J Bureau of Employees' McCauley, William Fleming, Philip B Maj Gen Compensation Federal Works Agency Public Buildings Administration Reynolds, W B
Public Roads Administration MacDonald, Thomas H
Bureau of Community Field, George H Facilities Independent Offices
Export-Import Bank of
Washington
Federal Communications Martin, William McC Denny, Charles R. Ir Commission Commission
Federal Deposit Insurance
Commission
Federal Power Commission
Federal Reserve System,
Board of Governors of the
Federal Trade Commission Harl, Maple T Smith, Nelson Lee Eccles, Marriner S Ferguson, Garland S Warren, Lindsay C Giegengack, A E General Accounting Office Government Printing Office Interstate Commerce Interstate Commerce Commission Library of Congress National Advisory Com-mittee for Aeronautics National Archives National Capital Park and Planning Commission Aitchison, Clyde B Evans, Luther H Hunsaker, Dr Jerome C Buck, Solon J Grant, US III, Maj Gen National Labor Relations Board National Mediation Board Herzog, Paul M Douglass, Frank P Kennedy, William J Railroad Reurement Board Securities and Exchange Caffrey, James J Wetmore, Alexander Commission Smithsonian Institution Tax Court of the United Turner, Bolon B Clapp, Gordon R States States
Tennessee Valley Authority
US Atomic Energy
Commission
US Civil Service Lilienthal, David E Mitchell, Harry B Smith, William W, Vice-Adm Ryder, Oscar B Bradley, Omar N, Gen Commission
U.S. Maritime Commission US Tariff Commission Veterans Administration Executive Office of the President Bureau of the Budget Webb, James E Council of Economic Advisers Nourse, Edwin G Office of Government Reports Emergency War Agencies Office for Emergency Management (in Executive Office of the President) Office of Defense Office of Deteuse
Transportation
Office of Scientific Research
and Development
Office of Temporary Controls
Bush, Dr Vannevar
Fleming, Philip B,
Maj Gen Director Philippine Alien Property Administration
War Assets Administration Henderson James McI Littlejohn, Robert M National Housing Agency Federal Home Loan Bank Administration Foley, Raymond M Fahey, John H Home Owners' Loan Corporation Federal Housing Cotter, Charles F Administration Foley, Raymond M Federal Public Housing Authority Office of Housing Expediter Board of War Myer, Dillon S Creedon, Frank R Communications
Philippine War Damage
Commission Denny, Charles R, Jr

Post Chairman President President President President President Administrator Commissioner Surgeon General Commissioner Commissioner Director Director Administrator Commissioner Commissioner Commissioner President Chairman Chairman Chairman Chairman Comptroller General Public Printer Chairman Librarian Chairman Archivist Chairman Chairman Chairman Chairman Chairman Presiding Judge Chairman Chairman President Chairman Chairman Administrator Director Chairman Blackburn, Katherine C Act'g Director

Director Administrator Administrator Administrator Administrator Commissioner Gen Manager Commissioner Housing Expediter Waring, Frank A Hershey, Lewis B, Maj Gen Chairman Selective Service System Director United Nations Relief and Rehabilitation Administration Rooks, Lowell W, Maj Gen Director General

Quasi-Official Agencies American National Red Cross

Pan American Union

Chairman, Central O'Connor, Basıl Committee Director General

Department or Bureau National Academy of Sciences and National Research Council

Iewett Frank Baldwin Bronk, Detley W

President National Academy of Sciences Chairman, National Research Council

Great Britain, Dec. 1946

Ministry or Department Admiralty Agriculture and Fisheries, Ministry of Air Ministry

Assistance Board Bank of England Burma Office Cabinet Office

Cairo, British Middle East Office Civil Aviation, Ministry of Colonial Office

Control Office for Germany and

Customs and Excise, Board of Defense, Minister of Dominions Office

Duchy of Lancaster Education, Ministry of Electricity Commission Food, Ministry of Foreign Office

Fuel and Power, Ministry of Health, Ministry of Home Office India Office

Information, Central Office of Inland Revenue, Board of Labour and National Service, Ministry of

Law Officers' Department Lord Chancellor's Office

Lord Privy Seal National Insurance, Ministry

Paymaster General's Office Pensions, Ministry of

Post Office Privy Council Office Scottish Office

Stationery Office, H M Supply, Ministry of

Town and Country Planning, Ministry of

Trade, Board of

Transport, Ministry of Treasury

War Damage Commission War Works Commission War Office

Works, Ministry of

NameViscount Hall J G Lang

Thomas Williams Sir Donald Vandepeer Philip Noel-Baker Sir William Brown

Baron Soulbury H Fieldhouse H Fieldhouse
Baron Catto
W H Nevill
Baron Pethick-Lawrence
Sir David T Monteath
Sir Norman Brook

Sir Arnold Overton Baron Nathan Sir Henry Self Arthur Creech Jones Sir George Gatei J A Calder H F Downie

John B. Hvnd

Sir Gilmour Jenkins Sii Archibald Carter Albert V Alexander Viscount Addison Sir Fric Machtig

John B Hynd Ellen Wilkinson Sır John Maud Sır Cyril W Huicomb A E Marson John Strachey Sir Percivale Liesching Ernest Bevin Hector McNeill Sir Orme Sargent Emanuel Shinwell Sir Donald Fergusson Aneurin Bevan
Sir William S Douglas
J Chuter Ede
Sir Alexander Maxwell Baron Pethick-Lawrence Sir David Monteath

R Fraser Sir Cornelius Gregg

George A Isaacs Sir Godfrey Ince Sir Hartley Shawcross Sir Frank Soskice Baron William Jowitt Sir Albert Napier

Arthur Greenwood

James Griffiths Sir Thomas Phillips Arthur Greenwood Wilfred Paling Sir Harold Parker Earl of Listowel Fostmaster General
Sir Raymond Birchall
Herbert Morrison
Sir Enc C E Leadbitter Clerk of the Council
Joseph Westwood
David Milne
Fostmaster General
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Fostmaster Genera

Sir Norman Scorgie Controller John Wilmot Minister Sir Archibald Rowlands Permanent Secretary

Lewis Silkin Sir Thomas Sheepshanks Sir Stafford Cripps H A Marquand

Sir J H E Woods Alfred Barnes Sir Cyril Hurcomb Clement Attlee

Hugh Dalton

Sir Edward Bridges Sir M Trustram Eve Sir M Trustram Eve F J Bellenger Sir Enc Speed George Tomlinson H C Emmerson

Post First Lord Act'g Perm'nt Sec'y

Minister Permanent Secretary Secretary of State Perm nt Under-Sec'y Chairman Acting Secretary Governor Secretary Secretary
Secretary of State
Perm'nt Under-Sec'y
Perm'nt Sec'y and
Sec'y of the Cabinet

Head of Office Minister Permanent Secretary Secretary of State Perm'nt Under-Sec'y Crown agents

Chancellor of the Duchy of Lancaster Permanent Secretary Chairman Minister Secretary of State Perm'nt Under-Sec'y Chancellor Minister Permanent Secretary Chairman Secretary Minister Secretary Secretary of State Minister of State Perm'nt Under-Sec'y Minister Permanent Secretary Minister Secretary Secretary of State Perm'nt Under-Sec'y Secretary of State Perm'nt Under-Sec'y Director General Chairman

Minister Attorney-General
Solicitor-General
Lord Chancellor
Perm'nt Sec'y and
Clerk of the Crown

Minister Permanent Secretary Paymaster General Minister Permanent Secretary Postmaster General Director General Lord President Sec'y Controller

Minister Permanent Secretary President Sec'y for Overseas Trade Permanent Secretary Minister Secretary Prime Minister, First Lord of the Treasury Chancellor of the Exchequer Permanent Secretary Chairman Chairman Secretary of State Perm'nt Under-Sec'y Minister Permanent Secretary

Government Expenditures and Receipts

See BUDGETS, NATIONAL.

Government Printing Office

See Printing Office, U.S. Government.

Government Reports, Office of

See WAR AND DEFENSE AGENCIES.

Governors and Prime Ministers, British

See BRITISH EMPIRE.

Govorov, Leonid N.

Govorov (1896-), soviet army officer, was born in Leningrad and graduated from St. Petersburg Military academy in 1916. He began serving the soviets as an artilleryman in Siberia and the Crimea during the campaigns of 1919-20. During the Russo-Finnish war of 1989-40, he acted as commander of soviet artillery which broke the Finnish Mannerheim line. In 1941 he was promoted to the rank of lieutenant general and in 1942 to that of colonel general. After Germany invaded the U.S.S.R., Govorov was put in command of single operations around Leningrad in the winter of 1941-42; he was given full command of the Leningrad front in Jan. 1943 and led the offensive which finally liberated the city on Jan. 27, 1944. His army then turned southwest, invading part of Estonia, and on June 10 opened a surprise drive into Finland through the Karelian isthmus, a drive which culminated in the Russo-Finnish armistice of Sept. 4, 1944. Turning south again, it then attacked in northern Estonia south of the Gulf of Finland, sweeping across the country in a lightning offensive which resulted in the capture of the capital, Talinn, in less than a week and the conquest of the entire mainland in less than two weeks. Govorov was promoted to the rank of field marshal on June 18, 1944.

Gowrie, Alexander Gore, 1st Baron

Lord Gowrie (1872-), V.C., G.C.M.G., British soldier and imperial administrator, second son of the 8th Lord Ruthven, was born at Windsor on July 6, 1872, and was educated at Eton. Joining the Highland light infantry in 1891, he took part in the Sudanese campaign under Lord Kitchener in 1898, and won the Victoria cross at the age of 27. He served also as a special service officer in the Somali campaign of 1903-04, was military secretary to the viceroy of Ireland in 1905-06 and to the governor general of Australia in 1908. During World War I he fought with the Welsh guards in France and Gallipoli, receiving the D.S.O. in 1916 and a promotion to the rank of brigadier general in 1917. From 1920 to 1924 he was in command of the Welsh guards, and from 1924 to 1928 of the first infantry brigade at Aldershot. In the latter year he was appointed governor general of South Australia and was created K.C.M.G. He was transferred to the governorgeneralship of New South Wales in 1935. Created a baron in Dec. 1935, he assumed the office of governor general of the Australian commonwealth on Jan. 22, 1936. He occupied that position until July 1944, when he was succeeded by the duke of Gloucester.

Gozo

See MALTA.

Grain

See Barley; Corn; Oats; Rice; Rye; Wheat, etc.

Grand Army of the Republic

See Societies and Associations.

Grand Coulee Dam

See DAMS.

Grand Mufti of Jerusalem

See Husseini, Haj Amin El.

Granite

See Stone.

Grapefruit

See FRUIT.

Grapes

See FRUIT.

Graphite

Totals of world production of graphite during the years 1937-45 could not be determined, since a number of countries did not report output; data for the major producers are to be found in Table I.

Table I.— World Production of Natural Graphite (Short tons)

				1937	1939	1941	1943	1945
Australia				15	-	484	514	ş
Canada				2,949	1,322	998	1,903	1.840
Ceylon				19,466	25,084	30,501	21,859	8,759
Czechoslovakia .				5,670	`ş	1,677	įŝ	ż
Germany				25,953	31,063	32,817	38,537	Ś
Austria				20,016	26,470	26,746	įš	\$
India				624	1,048	912	1,310	ş
Italy		٠		5,965	6,300	4,559	ż	1,976
Korea				48,027	86,533	įż	ą	ş
Madagascar				13,654	13,444	14,350	14,274	8,600 ?
Mexico				12,357	10,819	18,660	22,792	26,052
Morocco, French .				371	977	630	292	Ś
Spanish					ş	956	249	110
Norway				4,010	4,776	ş	ś	š
South-West Africa				·	· —	207	1,938	1,453
Spain				_	60	25	150	2,450?
United States				ş	ŝ	2,748	9,939	4,888

In the United States production continued to be economically possible only under emergency conditions, as was demonstrated during World Wars I and II. There was a small output in 1937-39, and operations became more

Table II.—Data of the Graphite Industry in the United States (Short tons)

								1937	1939	1941	1943	1945
Production								ş	ş	2,748	9,939	4,888
Shipments								š	ŝ	2,645	9,597	5,334
Imports								28,791	21,537	41,159	28,713	36,132
Flake								2,634	2,260	4,877	5,311	2,883
Lump, chip, dust								803	602	2,900	1,012	5,207
Amorphous	٠	٠		٠		٠	•	25,354	18,675	33,382	22,390	28,042
Mexico								13,381	ś	20,347	21,679	25,879
Ceylon								7,063	ś	13,048	480	2,166
Madagascar .	٠	٠		٠	٠	٠		ş	š	5,071	4,375	6,665
Korea		٠	٠	٠		٠		2,987	ŝ	1,853		
Evnorts	_							1.514	976	1.723	3.010	1.308

active in 1940, but it was only after 1941 that output was reported. Because of interruption of imports, several new plants were financed by the government, but by the end of 1943 the foreign supply had improved to such an extent that the government plants were shut down. In the postwar period, there seemed to be no more prospect for the continuation of a domestic industry than there was in 1919, as costs were higher and grades were lower than for imported graphites. Crystalline graphites are used in the manufacture of refractories such as crucibles, retorts, sleeves, stoppers, and nozzles, as well as in lubricants, carbon brushes, and pencils; amorphous carbon is used in foundry facings, lubricants and paint. (G. A. Ro.)

Grasshoppers

See ENTOMOLOGY.

Grau San Martín, Ramón

Grau San Martín (1887—), Cuban statesman, was born Sept. 13, 1887, in Piñar del Río, Cuba, the son of a wealthy tobacco merchant. He studied at the University of Havana, taking his degree of doctor of medicine in 1908, and continued medical studies at several European schools. Grau San Martín, who became titular professor of physiology at the University of Havana in 1921, resigned in 1927 in protest against the Gerardo Machado dictatorship. Two years later he was imprisoned by the police for revolutionary activities.

After Machado was ousted in the revolution led by Col. Fulgencio Batista y Zaldivar in 1933, Grau San Martín became president and held office for four months, resigning in Jan. 1934. As head of a Centrist political group, he announced in 1940 that he would run as opposition candidate to Batista for the presidency. He declared the Centrists were committed to a policy of economic and political co-operation with the United States and denounced the Batista followers as "Reds." He was defeated by Batista in the election of July 1940.

Grau San Martín again became a presidential candidate in 1944, this time successfully; his opponent was Carlos Saladrigas Zayas, a Cuban attorney who had Batista's support but lacked the dynamism and popularity of his mentor. Assuming the presidency on Oct. 10, 1944, Grau San Martín pledged democratic rule. The first two years of his tenure were marked by rumblings of revolutionary plottings against his regime. While his personal popularity remained high, he was attacked by Cuban conservatives.

He was also accused of being too lenient with the Cuban Communists. Grau San Martín, however, maintained that the influence of the Communist party in Cuba was negligible.

In 1945 and 1946, Grau San Martín's government put down two short-lived and seemingly localized revolts by groups of army men joined by anti-Grau civilians.

Gravel

See SAND AND GRAVEL.

Gravure

See PRINTING.

Graziani, Rodolfo, Marchese di Neghelli

Graziani (1882—), Italian soldier, was born Aug. 11, 1882, at Filettino. He served with the army in Eritrea from 1908–13 and in Libya prior to Italy's entry into World War I. In the campaigns against Austria he commanded an infantry brigade, and by Oct. 1918 he had advanced to the rank of colonel. After the war he was commander of a brigade in Macedonia and during his service in Tripolitania (1921–29) was promoted to general of a division.

In 1935 and 1936 he directed the southern attack against Haile Selassie's forces in Abyssinia. Second in military fame to Marshal Badoglio, he became known as Italy's greatest colonial soldier.

Upon Italy's entry into World War II on June 10, 1940, Graziani was confirmed as chief of the army staff. After the death of Italo Balbo the following month, he was also appointed governor general of Libya. As commander of

Italy's North African forces, he directed the Italian invasion of Egypt which began on Sept. 12, 1940. Although he was temporarily victorious at Sidi Barrani, his troops were soon routed by the British. As a result of this defeat, he resigned, in March 1941, as chief of staff and governor of Libya. After the deposition of Mussolini by Badoglio in July 1943 and the surrender in Sept. to the Allies, Graziani organized and led a new German-Italian force, for which service he received the German Iron cross in Oct. 1944. He was captured by the U.S. 15th army in April 1945 and was indicted for treason by the Italian authorities on the charge of having collaborated with Germany.

Great Britain and Northern Ireland, United Kingdom of

An independent kingdom in northwestern Europe, the United Kingdom comprises the main island of Great Britain, with numerous smaller islands off the English and Scottish coasts and the six northeastern counties of Ireland. It is a constitutional monarchy, with a king and a parliament of two houses, the house of lords consisting of about 670 hereditary peers, 24 spiritual peers, 15 Scottish representative peers, a number of Irish representative peers (in 1946, 8; vacancies were no longer filled) and a few life peers holding high judicial office; and the house of commons numbering 640 members, elected by universal suffrage. Area: 93,667 sq.mi. of which England (including Monmouthshire) covers 50,870 sq.mi.; pop. (census Aprıl 27, 1931), 46,212,308, of whom England had 37,794,003; (est. June 30, 1938, exclusive of army, navy and merchant seamen abroad) 47,676,000, of whom England had 39,050,-780; (est. June 30, 1946, members of the armed forces excluded) 47,175,000, of whom England had 38,866,000. Capital: London (pop. est. June 30, 1938): city and metropolitan police districts, 8,655,000; city and metropolitan boroughs only, 4,062,800. Chief towns (est. June 30, 1938): Glasgow (1,126,800); Birmingham (1,041,000); Liverpool (827,400); Manchester (732,900); Sheffield (520,000); Leeds (494,000); Edinburgh (469,700); Belfast (438,100); Bristol (415,500). According to the 1931 census, only 63,757 inhabitants of the United Kingdom were foreign-born. Religion: in England the Protestant Episcopal Church, established by law, and governed by two archbishops and 41 bishops, with (1936) 2,382,857 Easter communicants; the Presbyterian Church, established by law in Scotland (with 1,288,500 communicants); the largest Non-conformist bodies in the United Kingdom were the Methodists (828,950 members in 1937), the Congregationalists (467,490 members in 1937) and the Baptists (392,535 members in 1937); the Roman Catholics were estimated in 1937 at 3,386,000 and the Jews at 340,000. Languages: English is almost universally spoken, but in Wales 3% of the population (77,932 in 1931) speak Welsh only and 31% speak both languages; in Scotland 15% speak Gaelic only and 2.69% speak both languages; in the Isle of Man 528 speak English and Manx. Ruler: King George VI, succeeding to the crown on the abdication of his elder brother, King Edward VIII, on Dec. 19, 1936. Prime ministers: Stanley Baldwin (later Earl Bal win of Bewdley) (June 7, 1935-May 28, 1937); Arthur Neville Chamberlain (May 28, 1937-May 10, 1940); Winston Spencer Churchill (May 10, 1940-July 26, 1945); Clement Richard Attlee (after July 26, 1945).

The coronation of George VI of England (left centre) in Westminster abbey May 12, 1937. In the royal box are, left to right, the duchess of Kent, the duchess of Gloucester, Queen Maud of Norway, Queen Mary, Princess Elizabeth, Princess Margaret Rose





At the Opening of the Decade.-The year 1937 opened for Great Britain in relative calm but with the danger of war more clearly before people's eyes than ever before. The years 1935-36 had been troubled and anxious. The failure of the League of Nations to impose effective sanctions upon Italy had been followed by Italy's swift conquest of Ethiopia. Hard on that had come Adolf Hitler's occupation of the Rhineland, a break not only of the treaty of Versailles but also of the "freely negotiated" treaty of Locarno (1925). The whole territory of the German reich was under Hitler's control and could be fortified. In Spain the civil war between the forces of Francisco Franco and the republican government had broken out and a victory for Franco, which seemed to become more probable, would be, in effect, a victory for Hitler and Benito Mussolini, who openly supported him. In the far east Japan's steady aggression on China became more and more menacing.

At home the British people in Jan. 1936 had mourned the death of their much respected King George V. His eldest son, who had succeeded amid general good will as Edward VIII, had abdicated in Dec. 1936 in deference to the advice of his ministers and the general judgment of his people, whose concern for the traditions of the throne forced them to disapprove their king's taking as his consort a woman twice divorced. But the accession of King Edward's brother, the duke of York, as George VI and of his wife as Queen Elizabeth with two princesses as heirs had steadied the national sentiment. The political situation was stable. The Conservative prime minister, Stanley Baldwin, retired from office on May 28, 1937, and was succeeded by his chancellor of the exchequer, Neville Chamberlain, who was known to be a capable and steady man of affairs. The house of commons elected in 1935 supported the Conservative ministry by a majority of two to one. The Labour party led by Clement Attlee, supported by 150 members, played the traditional role of opposition. The Liberal party proper, led by Sir Archibald Sinclair, also criticized the government, but a section of Liberals under Sir John Simon, the eminent lawyer who succeeded Chamberlain at the exchequer, held office in the Conservative coalition government, styled "national government." Anthony Eden, one of the younger Conservatives, was at the foreign office and was believed to represent the more active spirit of opposition to the European dictatorships.

The major problem at home was that of unemployment, which had been a chronic source of dissatisfaction since the year 1921. The different parties attributed its existence to different causes and prescribed different cures. The Conservatives in general believed that the protective duties which they succeeded in imposing in 1932 would go far to reduce this evil. The Labour party believed it to be an inevitable consequence of the capitalist system, curable only by socialism. The Liberals believed that free international trade was the solution, and some Liberals and many Conservatives held also that restrictive practices by trade unions and government interference in business had an adverse effect. Yet by previous standards the year 1937 was one of relative prosperity. Exports were £77,000,000 above those of the previous years and most important trades showed improvement.1 Although toward the end of 1937 there was a rise in unemployment, the average for the year, 1,484,000 registered unemployed persons, was only just over half of the 2,845,-

ooo of 1933. Unemployment in the years between the wars in Britain was particularly bad in certain areas. The government tried to improve conditions by scheduling certain districts as "special areas" (q.v.).

Beginning of Rearmament.-Yet one factor made for greater activity and re-employment in the heavy industries. Great Britain was rearming. Slowly, very reluctantly, the people and government had responded to the threat of Hitler's rapid and terrifying rearmament. From 1934 onward the sums voted by parliament for defense had begun to increase. In 1937, in addition to the usual sums voted out of taxation, there were added sums from a defense loan. The net sums to be spent on defense in the year 1937-38 (the financial year running from April 1 to March 31) were £105,000,000 on the navy, £82,000,000 on the army and the same amount on the air force, a total of £269,000,000. Great Britain after 1919 had never been an unarmed country. By the Washington treaty of 1922, naval parity with the United States had been established, as had a 5 to 3 superiority in capital ships over Japan. Both countries maintained an air force, reckoned for 1937 in books of reference at about 2,400 first-line aircraft, and rivalled only by France, Italy and Japan and possibly the mysterious growing force of Germany. Britain, like the United States, refused from policy, tradition and conscience to maintain large armies. A peacetime strength of just over 150,000 land forces was supposed to meet the need for security of each of these two great powers.

The expansion of British armed forces was slow and the speed of re-equipment depended on planning mass production, the fruits of which must be delayed. The danger against which the government was preparing, if mysterious in extent, was certainly terrible in nature. The public did not know accurately how great it was; some underestimated it, others took a wildly alarmist view. All were agreed on one thing; all wanted peace. From high tory to the extreme left wing there was agreement on this. But there was no agreement on the means by which peace was to be secured. The Conservatives, on the whole, believed that it might be preserved by agreement and negotiation. The radicals, regarding Hitler and Mussolini as irreconcilable enemies of democracy, felt they must be withstood, if necessary by force. But in the past, the radicals had in all sincerity denounced the notion of a "national war." They hoped that the dictators might be stayed by use of the collective security system of the League of Nations and by any other states which might join the League to enforce peace. The Conservatives had little confidence in this policy and while rearmament was still incomplete, felt bound to negotiate as best they might with what they hoped might not prove totally irreconcilable enemies. It was against this background of fear of war, tardy preparation for war and totally varying conceptions of how war might be avoided that British political history at this time must be viewed.

The year 1937 opened with attempts by the British government to find agreement with Germany and Italy on the banning of volunteers to fight in the Spanish war. The opposition was dissatisfied and accused the government of insufficient firmness. The most effective effort by France and Great Britain in the Spanish problem was the agreement made at Nyon, near Geneva, to take strong action against attacks on shipping by submarine or aircraft in the Mediterranean. This policy was completely successful and it gave comfort to those who believed in a firm front against the dictator states.

Throughout the next two years, however, until the final

¹Exchange rate of the £—annual average: 1937 \$4.9444; 1938 \$4 8887, 1939 \$4 435, 1940-44 \$4 035, 1945 \$4 034, 1946 \$4 034

victory of Franco in Feb. 1939, the Spanish question alarmed and embittered British politics. To the whole-hearted Socialist, it was agonizing to see his "comrades," the Spanish workers, defeated and oppressed while the so-called "democratic" governments of Britain and France looked on helplessly. Even to those who had their doubts about the merits of the republican cause it was extremely disquieting to find that the new government of Spain was the debtor and presumably the ally of the dictators of Italy and Germany.

Coronation and Imperial Conference.-The nation turned aside from foreign alarms and political struggles to celebrate the coronation of King George VI on May 12, 1937. Attended by eminent representatives of all nations, the coronation also brought the leaders of the self-governing dominions to London, and after the ceremonies were over an imperial conference was held. The prime ministers of Canada, Australia, New Zealand and South Africa conferred with the British minister on common problems of defense, trade and colonial affairs. On foreign affairs the assembled prime ministers issued a public declaration in favour of the preservation of peace: they affirmed that their respective armaments would never be used for aggression or for any purpose inconsistent with the covenant of the League and the pact of Paris (Kellogg-Briand pact). They declared themselves attached to the principles of parliamentary democracy but held that differing political views should be no obstacle to friendly relations between governments and countries and that it would be disastrous if the world were to split into opposing groups of nations.

The country at this time was relatively free from strikes and trade disputes, but even at the time of the coronation the people of London were irritated and inconvenienced by a strike of busmen which was called in spite of a full investigation by a general board of inquiry and against the advice of the transport workers' leader, Ernest Bevin. In parliament the government suffered an unexpected reverse over its financial policy. In his budget proposals for the year Chamberlain had put forward a tax called the national defense contribution. This was a tax on profits of industries to be levied on firms which showed an increase of profit by more than $f_{2,000}$ after the year 1936. The motive behind the tax was moral and political. The government defense program was stimulating industries in many ways and it was felt that those who were profiting by the new government expenditure and the national danger must pay an additional share of taxes. The tax was indeed a conservative concession to radical ideas and from the first aroused much criticism.

At the end of May, Chamberlain, now prime minister, faced strong opposition. Hugh Dalton, the chief Labour party financial expert, criticized the tax as an insufficient check to profiteering in armaments, while the government's own Conservative supporters objected to the tax as a clumsy and dangerous interference with business. Chamberlain retreated before this storm of criticism and agreed to a much simpler and more moderate tax. The incident showed how British governments in the house of commons could be made to revise their policy without actually being defeated on a division. In the same session, the house of commons gave proof of its initiative by passing a bill to amend the law of marriage sponsored by A. P. (later Sir) Herbert, an independent member representing Oxford university. This greatly simplified divorce procedure and added desertion and insanity to the grounds admissible at law.

Defense Policy.-One major decision was taken in 1937



Prime Minister Chamberlain returning from his conference with Hitler on the question of German demands in Czechoslovakia. The meeting took place on Sept. 15, 1938, at Berchtesgaden

on defense policy. The government decided that the aircraft borne in ships of the royal navy should no longer be a part of the royal air force but should be controlled administratively as well as operationally by the admiralty. This settled a long-standing dispute and permitted the further organization of the fleet air arm in aircraft carriers which proved so fruitful in World War II. War and preparation for war thus remained prominent in public interest. In September interest veered round to China, where the bombing of Nanking by the Japanese and other events in the far east caused great anxiety. A great protest meeting in the Albert hall in London was addressed by the archbishop of Canterbury and speakers of all three parties.

All these protests, however, brought attention back to the problem of power and armaments. On this, the Labour party was much puzzled and divided. As it desired to check aggression it could not refuse to admit the need for arming, yet the leaven of deep pacifist feeling in the party made it hold back. The trade unions, whose willing co-operation was so important in the defense program, discussed the question at their annual congress in Sept. 1937. A statement of policy was prepared by the National Council of Labour: the government should invite powers which had grievances to state them and through the League of Nations these grievances should be considered but at the same time the dissatisfied nation should be offered political security and economic opportunity. On the other hand, continued the statement, the government must, "through the League, confront the aggressors with an emphatic superiority of armed force." This

policy was criticized at the trades union congress, but on a card vote was supported by 3,544,000 to 224,000. In November the text of a general bill for air raid precautions was made public and the house of commons discussed earnestly the possibility of large-scale bombing and measures of administration and relief. In army affairs Leslie Hore-Belisha, the new secretary of state for war, was making sweeping changes in conditions of service and appointing younger generals to high command.

Austrian and Czech Crises.—The year 1938 opened with no change for the better in the foreign situation, but at home the country was relatively prosperous, and housing and other social reforms were being pursued steadily but not sufficiently to satisfy the Socialist opposition. In Feb. 1938 a change for the worse came over German policy with the dismissal of Gen. Werner von Blomberg from the post of defense minister and the replacement of Konstantin von Neurath as foreign minister by Joachim von Ribbentrop. About the same time Eden resigned from the foreign secretaryship, being in disagreement with Chamberlain on the general line to be followed by British policy against the dictators. In March Austria was occupied practically in a day and annexed by Hitler to the reich. The shock to Britain was severe but no action was or could be taken. Italy, which in the early days of nazi-

Winston Churchill leaving a ministerial conference called at 10 Downing street upon news of the fall of Paris in June 1940



ism had shown some intention of preserving Austrian integrity, was now openly hostile to Britain and firmly bound to Germany. France was in the midst of a political crisis. In Britain there had always been a strong feeling, especially in radical circles, that it had been an error and injustice to forbid, as the Allies had done in 1919, an Austro-German union.

But scarcely had the Austrian crisis been "solved" when another even graver threat arose in Czechoslovakia. Hitler began to threaten this state and to complain of the illtreatment of the 3,000,000 Germans in Bohemia and Moravia. Once again British opinion was in confusion. The strong criticism of the treaty of Versailles which dominated political ideas in Britain and the United States had favoured a view which was very convenient to Hitler. His seizure of Austria had been "wrongful aggression" but the Austro-German union was, so it was thought, not wrong in itself. The inclusion of millions of Germans in the Czechoslovak state was to many Englishmen a wrong which should be righted, but not by force. Whether the criticisms of the treaty of Versailles which by 1938 were generally accepted, were right or wrong is a matter for historical dispute. The prime political fact in 1938 was that they were believed. Opposition to Hitler had therefore to be based not on the wrongfulness of his demands but on his methods and on his record as a tyrant, an anti-Semite, an enemy of the peoples, a danger to world peace.

Both conservatives and radicals were to some extent morally disarmed in calling for opposition to German policy. And it followed also that as Germany had won so much sympathy in the decade after World War I, France had lost sympathy. Nonetheless, English statesmen and the public looked to France to join in withstanding naziism. At the end of April 1938 the French prime minister and minister of foreign affairs visited London for conferences with Chamberlain and his advisers. But there was little that their combined wisdom could do. The Rhineland had been occupied in 1936. Though it was not yet strongly fortified, the French had lost the bridgehead from which to defend central Europe and relieve the Czechs. Konrad Henlein, leader of the Sudeten Germans in Czechoslovakia, was pressing for even greater concessions from the Czech government. In the hope of a settlement the British government sent an eminent senior statesman, Lord Runciman (formerly the Liberal president of the board of trade, Walter Runciman) to Czechoslovakia to try to reconcile Germans and Czechs. But the German government only increased the pressure. From late July to mid-September, Runciman remained in Czechoslovakia, becoming less and less hopeful of any settlement short of an annexation of territory by Germany.

On Aug. 13, impressive manoeuvres of the German army took place and at Nuernberg in September, at the annual nazi rally, Hitler referred in terms of scorn and loathing to the Czech president, Dr. Eduard Beneš. War seemed very near if Hitler was to be opposed.

There followed the long and agonizing crisis during which the people of Britain almost incredulously prepared for war, for mobilization and air raids. Although the government had passed legislation for air raid precautions and was considering evacuation of children and pressing on with rearmament, these measures were in a rudimentary stage and the public was not fully trained to co-operate in them. On Sept. 7 the first sign of a weakening in British policy appeared in a leader in the London Times which suggested in veiled terms that a revision of the Czech frontiers would be the safest and fairest solution.

This article was believed, rightly or wrongly, to have been inspired by the government. On Sept. 12 Hitler promised to support the Sudeten Germans with arms and the Czech government courageously replied to this by proclaiming martial law in the threatened areas. Chamberlain now took a decision which was, generally speaking, hailed with admiration at the time and condemned later. He decided to fly to Germany and seek a personal interview with Hitler. It was later suggested that his motive was to "save naziism" or to "save German capitalism." This was a view held on the left. From Prof. Keith Feiling's Life of Chamberlain (1946) it would appear that he was concerned only with averting war. It was, after all, that bid of flamboyant gesture in favour of peace that many people had said Herbert Asquith or Lord Edward Grey or some other European statesmen should have made to avert war in 1914.

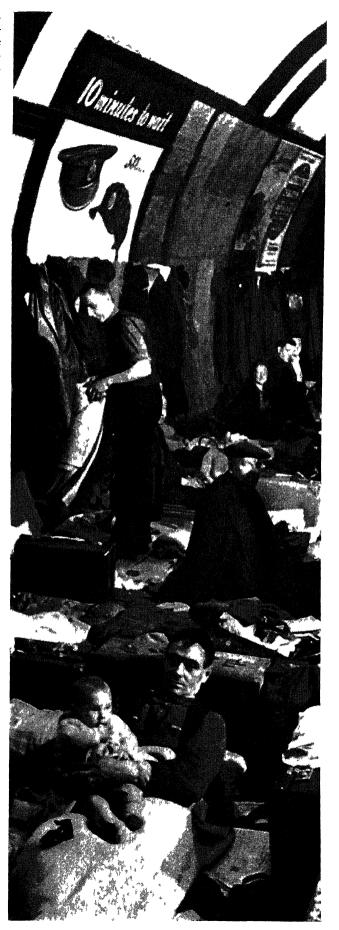
On Sept. 15, Chamberlain flew to Berchtesgaden in Bavaria. He returned and then secured the consent of the French and Czech governments to a proposal that the frontiers should be revised in Germany's favour. On Sept. 22 he flew to Germany again, Hitler this time coming to Godesberg on the Rhine to meet him. But now Hitler demanded that the new Czech frontiers should be fixed by Germany alone. War seemed only a matter of days and hours, and feverish preparations were made; air raid shelters were dug and old anti-aircraft guns were brought out. What was more serious was that on Sept. 28 the order was given to mobilize the navy. Also on Sept. 28 the house of commons met to receive a statement from the prime minister.

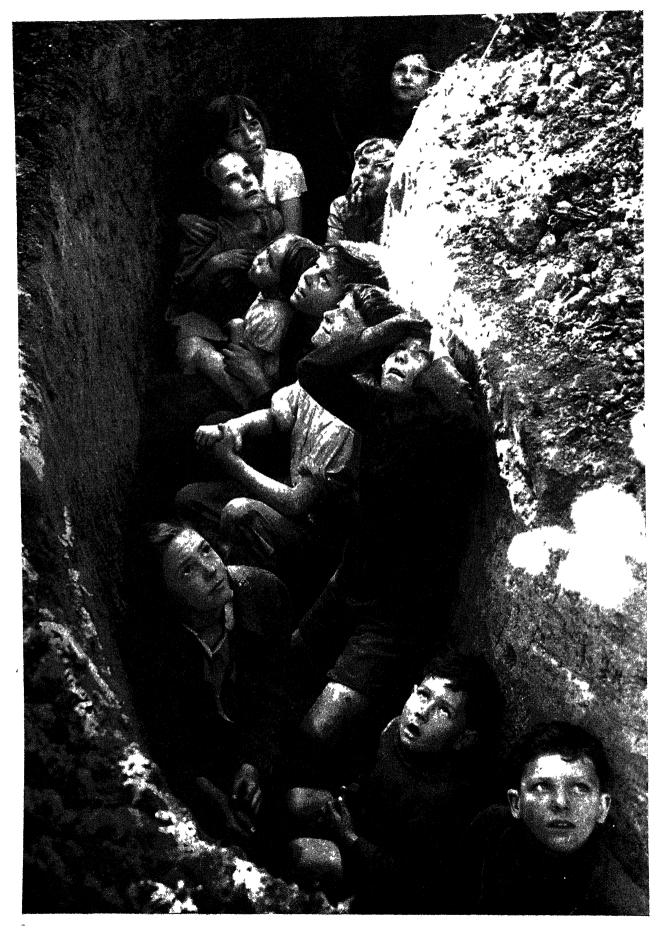
The nation looked for the news of impending war, but at the last moment Chamberlain announced that through the intervention of Mussolini it had been decided to hold a Four-Power conference at Munich immediately. This meant a respite, and when Chamberlain returned from the Munich conference with news of an agreement the relief of the public was unbounded. Peace had been saved.

The enthusiasm did not last, for it speedily appeared that the agreement had been a surrender in all matters of substance. Public opinion divided itself sharply. Chamberlain, who had been cheered whenever he appeared in the newsreels, was soon booed by large sections of the audience. Winston Churchill, who, never having been a member of any government since 1929, was in a position of freedom, denounced the surrender. Alfred Duff Cooper, first lord of the admiralty, resigned. Attlee, Sir Archibald Sinclair, the Liberal leader, and the left generally protested against the surrender, the betrayal of Czechoslovakia, the defeat of democracy. But there was great confusion in all parties. The left was the party of peace; it was this party which first of all in 1919 had led the hue and cry against the peace of Versailles, almost writing Hitler's speeches in advance. It had asserted that wars were made only by capitalists, imperialists and profiteers. Many said that a terrible error had been made in not inviting the U.S.S.R. to the conference, but it was well understood that Hitler would never have accepted such a proposal. Three by-elections took place shortly after in which Munich was the main issue. At Bridgewater in Somerset, Vernon Bartlett, a radical journalist, won the seat on an anti-Munich platform. But at Oxford the radical candidate, A. D. (later Lord) Lindsay, was unsuccessful. In West Perthshire the sitting member, the duchess of Atholl, a Conservative, resigned her seat to test opinion and stood as

One of the underground stations which served Londoners as air raid shelters and make-shift living quarters during World War II.

This shelter was in the West End





anti-Munich. But a government pro-Munich candidate was returned. In dividing on the question of Munich and of war or peace, the younger members of the public seemed to feel the shame more bitterly and to resign themselves to the necessity of eventual war; the older were the more pacific. The notion that "old men made wars for young men to die in" received no support from Britain in 1938–39.

Hitler lost no time in stating that he attributed his victory purely to fear and not to any good will. Coming to Saarbruecken, as far west as he could go in the reich, he made on Oct. 9 an extremely hostile speech against Britain, practically threatening that if Churchill, Eden or Duff Cooper were to enter the cabinet there would be war. The Italian problem was now relatively a minor matter but still of great importance. Italian broadcasts were inflaming Arab opinion against Britain in the middle east, for at that time it was the Arabs who were most belligerent in Palestine and against whom measures had to be taken by British armed forces. An agreement on political and economic matters between Britain and Turkey slightly improved British prospects in the Levant. An agreement made with the Irish government ended a dispute of five years standing over land annuity payments refused by Eire and recouped by Britain in the form of additional payments. In Nov. 1938 the Anglo-U.S. commercial treaty was completed and gave hope for larger British exports to the United States if peace should last. In Dec. 1938 the British people passed what was perhaps the uneasiest Christmas in their history.

Breakdown of Appeasement.-The uncertain peace with which 1939 opened depended on the threefold assumption that Hitler was satisfied with the Munich agreement; that he had a genuine fear of war; and that his statement that he had no further territorial demands to make in Europe was true. In March 1939 all three assumptions were shown to be groundless. On March 16 Hitler ordered his troops to march into the diminished and now defenseless territories of the Czechoslovak republic, and Prague was occupied and visited at once by Hitler. The former Czech territories were proclaimed a protectorate under the old names of Bohemia and Moravia. The Munich agreement was recognized by all to have completely failed as an attempt at appeasement. It could only be defended, if at all, as a necessary surrender to Germany's supposed military superiority at the time. The effect on British opinion was to bring parties together and to produce a united front. The prime minister, Chamberlain, was guarded in his first statement to parliament, but on March 17, speaking in Birmingham, he was clear enough. The whole nation listened to him on the radio while he asked, "Is this the end of an old adventure or the beginning of a new?" He struck a new note of hostility to nazi Germany when he observed, "Perhaps most sinister of all, we hear again of the appearance of the gestapo in Prague." This was to recognize the nature of the nazi state as a cruel tyranny and to stiffen British feelings of resistance. Greater unity at home was accompanied by closer and swifter action with France. A formal visit of the French president, Albert Lebrun, took place on March 21 and the solemn reception in Westminster hall of the president by the king and both houses of parliament emphasized the close ties between the two countries.

As the next victim of Hitler was obviously Poland, the British government on March 31 declared that in the event of a German attack it "would lend Poland all the support in its power," and the French government adhered to this

Curiosity overrode fear in the faces of these English children who took shelter in a ditch during a German air raid in 1940

guarantee. Fuller and more formal guarantees were given later both to Poland and to Rumania and financial credits were arranged. These signs of firmness were all the more necessary because on Good Friday, April 7, 1939, Mussolini occupied Albania with overwhelming force and showed himself as unsatisfied in his sphere as Hitler. The ends of British policy were now clear and had general support. What might still be in dispute was the means.

In April a bill was introduced into the house of commons to give the government and all local authorities stronger powers in matters of civil defense, which meant primarily precautions against air raids. By Aug. 1, 1,900,000 men and women had been enrolled in civil defense services and 1,000 steel air raid shelters had been delivered. On military preparation there was less unanimity, and when the government on April 26 announced its intention of imposing compulsory military service the left parties, Labour and Liberal, offered some opposition in parliament and still argued for voluntary recruitment. Later on in the summer the first recruits were called up. A ministry of supply was also created to direct and unify government purchases of war material.

It was recognized that the United States under President Roosevelt would be in sympathy with British resistance to aggression but would not go to the length of direct participation in a war. In May and June King George and Queen Elizabeth visited Canada and went on to Washington to be the guests of the president. But soviet policy was obscure. The only power with a land army comparable with that of France and Germany was an enigma. British opinion on the U.S.S.R. was very largely determined by people's socialist or antisocialist proclivities. The Socialists believed that the capital sin of Munich was the absence of the Russians from the conference. If only, they said, Great Britain had a real democratic people's government whom the soviet union could trust, then its support would be assured. Conservative opinion was inclined to doubt; the will and the power of the U.S.S.R. to intervene was questioned. By this time, so desperate was the situation that almost everyone was prepared to accept the soviet's support, except the small section of open pro-fascists led by Sir Oswald Mosley.

No sign of intervention came from Moscow. On May 3, 1939, Maxim Litvinov, the U.S.S.R.'s supposedly "pro-League of Nations" foreign minister, resigned his office and was replaced by Vyacheslav Molotov. Undeterred, the British government sent a special mission to Moscow under a diplomat, William Strang. In Aug. a combined French and British military and naval mission went to Moscow. They were there when the world received news on Aug. 21 that the soviet government would sign a pact with Ribbentrop, the German foreign minister. Just as the occupation of Prague united British opinion, the Moscow pact united it further, with the exception of avowed Communists who from this moment until the invasion of the soviet union by Hitler in June 1941 were averse to British participation in the war and proclaimed it to be another war of capitalist imperialism.

On hearing the news of the Moscow pact, Chamberlain at once returned from his holiday in Scotland. Parliament was convened and the prime minister declared that British policy with respect to Poland was unchanged by the conclusion of the pact. The house of commons supported him by 427 votes against 4. On the same day the Emergency Powers act was passed through all stages in both houses and received the royal assent that evening. It conferred unprecedented powers on the executive in the event of war.



The ruins of Coventry still obscured by smoke after the devastating night attack by German blitz-bombers in 1940

Nine days after announcement of the Moscow pact the expected invasion of Poland began. The public expected immediate war but the actual declaration did not come until midday on Sunday, Sept. 3. A last attempt to mediate by Mussolini had been permitted, and when it failed the British and French governments sent Hitler an ultimatum demanding a withdrawal from Poland of all German troops.

Early Phases of the War.—The first political step taken by Chamberlain was to broaden his government. He offered to include the opposition Liberal and Labour parties but failed to get their confidence and support. Two prominent Conservative leaders, Winston Churchill and Anthony Eden, accepted office, Churchill as first lord of the admiralty, the same post as he had held in 1914, while Eden went to the dominions office. For directing the war more effectively a war cabinet of nine members was set up; it included Churchill.

Throughout 1939 the civil authorities of Great Britain had been preparing a scheme for the evacuation of women and children from the large and vulnerable cities to areas supposed to be safer, where they would at any rate be dispersed. A million and a half people were thus evacuated in the days just previous to the outbreak of war and the whole scheme worked with astonishing smoothness. It was probably the greatest single population move in British history. Gas masks were supplied to the whole population, and the civil defense forces now numbered 2,500,000. To their surprise they had nothing to do. It had been expected that air raids on London and other cities would begin at once. For the first nine months of the war the large army of air wardens and others waited for bombs that never fell.

The government which led the British nation into the war had full support from the public for its action, but it had not general confidence. In the days just before and after the outbreak of war, Chamberlain recovered some of his prestige and authority but there was a widespread feeling that he was too old, too unadventurous and too civilian in his experience to be a real war leader. The strange and for the most part depressing course of events abroad weakened his prestige even when, as sometimes happened, he could not be in any way blamed for them.

In the first winter of war the British people were comfortable enough in their physical circumstances. Rationing was begun, first of meat, then fats and gasoline, but dict was still plentiful and good. The blackout at night was troublesome but people soon became used to it. The German submarine blockade was kept well within bounds. The most alarming event was the magnetic mines in estuaries and harbours. But this was overcome by the skill of the naval authorities. Protected by the convoy system, British trade continued to flow and there were large quantities of consumer goods still in store.

But if they were comfortable physically, the people of Britain were uneasy in their minds. A British army was in France under the supreme command of French Gen. Maurice Gamelin. Yet there was no fighting. A few German air raids on the northeast of Scotland had done little harm. Yet everyone felt that the real war was still to come. In December the Russians invaded Finland and the British and French governments joined with other states in the League of Nations in condemning this aggression. The unity of the left in England was threatened, but on the whole it was only a small number of Communists and crypto-Communists who sympathized with Russia. There was a general desire to help Finland, but as neutral Sweden refused to permit supplies to pass, nothing could

More serious were the events of the early spring of 1940. The sudden invasion of Denmark and Norway, including the occupation on April 9 of Oslo and parts as far north as Narvik, was a staggering blow to British confidence and seemed to reflect on the foresight of the government and the efficiency of the admiralty. Although the German destroyers in Narvik bay were sunk and the port eventually recaptured, a force landed farther south to recapture Trondhjem was unable to advance and had eventually to be withdrawn in the first week of May. On May 7 and 8 an angry house of commons debated the Norwegian situation and the government found itself attacked from all quarters; not only Attlee (Labour) and Sinclair (Liberal), the official opposition, but independent Conservatives such as Leopold Amery and Richard Law joined in. Churchill as first lord of the admiralty defended his chief and his colleagues, but on a division the government had a majority of only 80. This was less than half its usual majority. Chamberlain regarded the slump as a vote of no confidence and resigned on May 10.

Churchill Coalition.—If there had been any doubt as to who might succeed it was dispelled by the news on that day that German armies had invaded the Netherlands and Belgium and were taking the offensive with tremendous air support against the whole Franco-British army. Throughout the winter the public had been turning more and more to Churchill. He impressed people as a man who understood war, who had held high office through the preceding war and who had more than any other statesman warned the nation against strategic dangers and weakness both in rearmament and foreign policy. His broadcasts were the only speeches which really heartened the listeners, and people came to feel that this descendant of the great duke of Marlborough was the only man to surmount so terrible a crisis.

With the accession of Churchill the nation had at last a real national government. He included in his cabinet the principal Labour leaders, Attlee as deputy prime minister, Herbert Morrison as home secretary, Ernest Bevin, the former trade union leader, as minister of labour and national service. The Liberal Sir Archibald Sinclair was air minister, and a former Labour first lord of the admiralty, A. V. Alexander, took over the department from Churchill. Among prominent conservatives who remained in the government were Eden, who went to the war office, Lord Edward Halifax, who remained at the foreign office, Sir John Anderson, who was a member of the war cabinet, and Sir Kingsley Wood, chancellor of the exchequer. Chamberlain himself served in the new government in a nonadministrative office to encourage his friends to give it every support. So strong was the support given to the new government that there was no one in the house of commons who could be recognized as leader of the opposition. Enemies it had in the house, but these were isolated individuals, notably Aneurin Bevan, a Welsh Socialist who was always extremely outspoken against Churchill.

The nation watched with alarm the swift German conquest of the Low Countries and France. So swift was it that when on June 5 the last British troops had been evacuated from Dunkirk with the loss of all their equipment this was hailed as a great deliverance, since it had seemed probable that the army would be surrounded and captured. Until the final capitulation of the French government was signed on June 22, every effort was made to assist France, and on the political side Churchill made his famous offer of a union of the two countries. When at last the British people realized that they stood alone there was an even

greater rallying of national unity. In the brilliant summer weather of that year, so favourable to air raids and invasion, the efforts of the whole people were bent on supporting the government in every demand it made; in the factories there were tremendous feats of production. From this time onward to the end of the war it became difficult to distinguish between the civil and military history of the country. The whole able-bodied population became engaged in some kind of war effort; there was even conscription for factory work both of men and women. The forms of service more immediately connected with the war were the civil defense services, including a huge auxiliary firefighting service, the royal observer corps which traced the movements of all aircraft friendly or hostile, and the home guard which was formed for defense against invasion and grew rapidly to 1,500,000 men covering every parish in the land. There was no normal working day. After the usual hours of work men had to serve as wardens or to train as home guards or go to the observation posts to scan the sky. It might be thought that this would bring all ordinary educational or cultural life to an end, but this was not the case. The school education system was kept intact, although many schools had to be evacuated for fear of air raids or because of actual destruction. The universities, with depleted staffs, kept in operation. The armed services used the universities for training cadets specially selected from the schools. With increasing difficulties publishers kept up a supply of new books. Long evenings at home or waiting for duty encouraged reading and reflection. Unlike World War I it was a very political war. Plans for reconstruction were discussed, royal commissions and departmental committees worked at projects for social betterment and Sir

British women war workers engaged in the mass production of Sten sub-machine guns. Women became subject to the labour draft in 1943



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William (later Lord) Beveridge produced his famous plans for fuller social insurance and for full employment. In all the services there were lectures and classes and the army had a large education department.

Parliament never relaxed its vigilance over government. Many matters had to be dealt with in secret sessions, the secrets of which were remarkably well kept. Some matters dealing with military plans and scientific secrets could never be mentioned at all. But debate remained lively and the institution of questions to ministers was as vigorously used as ever. For example, during the battle of Britain in Sept. 1940, questions were continued after the air raid warning had been given, the speaker only adjourning the sitting on receipt of the imminent danger warning but recalling the house for 20 minutes more of questions as soon as the "all clear" had sounded. The British Broadcasting corporation served the country well in spite of great technical difficulties and poured out a constant stream of propaganda in many languages. The need to learn the war news, the latest directions about food, security in air raids, clothes and gasoline rationing, etc., turned the whole nation into avid listeners to the radio. Talks on politics, culture, art, etc., had huge audiences.

Battle of Britain.—From the surrender of the French armies to the invasion of the U.S.S.R. by Germany in June 1941, the war history of the British people passed through two phases. The first was that of mere survival, from June to Oct. 1940. At any time during this period, an invasion was expected. The crisis was reached about the middle of September when the alarm was actually given and regular

soldiers and home guards took up action stations. The decisive air battle was fought at that time, ending in a defeat of the luftwaffe in spite of their numbers, skill and courage. The British fighter aircraft and pilots had proved to be superior.

The second phase was that of endurance, and began with the heavy air raids on London in Sept. 1940 and ended with the great raid of May 11, 1941, in which the house of commons building was burned out. The damage done in air raids was tremendous but the casualties were lighter than had been expected. It became evident that fire caused the greatest material damage.

The invasion of the U.S.S.R. (June 22, 1941) produced a change in the political atmosphere. The Communist party and its sympathizers who had until then been indifferent if not hostile to the war effort turned suddenly into its foremost advocates. It was now a people's war, a war of the workers, and the cry was raised that the British government must by every possible means "democratize" itself and demonstrate to the conquered peoples of Europe that Britain and the soviet union were the firmest of allies and united in favour of a socialist Europe freed from all reactionaries. The leaders of the Labour party had experienced too much trouble with the Communists to accept their propaganda, but there were large sections of British industrial workers who were greatly encouraged by the thought that now at last they fought side by side with their Russian comrades. As the German armies advanced swiftly and dangerously across the Russian plains the cry arose for more effective help until in 1942 and 1943 the slogan "a

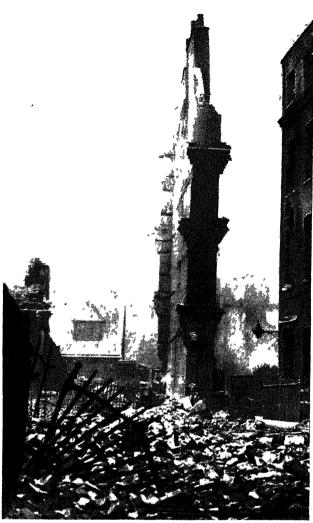
Night plowing on a farm in Kent. Fields were lighted by farmers' headlamps, introduced by the ministry of agriculture in 1943



second front now" was chalked up on walls and billboards. The government could do nothing to satisfy this demand for it was bound by strategic necessity, and all its resources were occupied in naval and air operations and in conquering the Italian East African empire and, later, in the desperate struggle in the western desert to defend Egypt and the Suez canal.

While one clearly defined and important section of the population looked to Moscow, the remainder of the population looked more to the United States. President Roosevelt's speeches were listened to with the deepest respect. The institution of lend-lease in March 1941 was recognized by Britain as a necessary step for the continuation of British military effort and the maintenance of civilian life. The security of Atlantic convoys was increased first by the exchange of 50 U.S. destroyers in 1940 for the lease of air bases and later by the actual participation of U.S. destroyers in convoy protection before a state of war existed between Germany and the U.S.A. When the attack on Pearl Harbor brought the U.S.A. into the war as a belligerent and Britain and the U.S.A. had both to face a dangerous and nearly successful Japanese attempt to dominate the Pacific and India, the mutual dependence of the two countries was made very clear. Moreover, U.S. statesmen and leaders in their public utterances never failed to speak the language of friendship while the chorus of admiration which poured out from Britain to the Russians in their sufferings and achievements produced but small response from Moscow. Nonetheless there was a double pull exercised on British opinion. Broadly speaking, those who thought in terms of social stability looked to Washington; those who thought in terms of social change or even revolution to Moscow; one was the great capitalist power, the other the great socialist power. The arrival of U.S. armies in Britain gave people a new feeling of friendship for the United States but the political consequences were difficult to discern.

Swing to the Left.-As the war continued it became clear that British opinion was moving to the left. Officially there was an electoral truce. When, on the death or resignation of a member of the house of commons, a by-election took place, the three main parties agreed not to contest each other's candidates. The party which held the seat before was expected to have the support of the other two for its nominee. At first, most by-elections were uncontested, but after the worst crisis of the war was over the independent mood of the electorate asserted itself. Assent to the electoral truce by Labour voters was at best formal. Their leaders loyally refrained from supporting an anticonservative candidate, but any candidate who presented a radical or leftist platform would win considerable support. Sometimes an independent would defeat the government conservative candidate. Where a Labour candidate had the right to stand in what had previously been a Labour seat no unofficial conservative ever appeared. A new party, founded by a former Liberal, Sir Richard Acland, called the Commonwealth party, secured some remarkable victories or near victories. It stood for very complete socialism, claiming to be superior to the Labour party because it was free from trade union bosses. The radical side, in fighting these elections and snatching seats from the Conservatives, could justifiably claim that the Conservatives had been given a huge majority in 1935 and that parliament was now out of date. Each year during the war it was prolonged by an act of parliament for a further year, this being possible under the flexible British constitution, but voices were raised in the house against this perpetuation of a house of commons so far removed from the circumstances of its first election.



A single wall of the former Sergeant's inn on London's Fleet street remained standing after one of the German air raids of 1941

And if the electoral truce broke down there was never in any sense a real political truce. The Labour party supporters refused to remain inactive and kept up a vigorous political life. In their view the only justification of the war was that it was a war for democracy; it could be won most quickly by a truly democratic government, and the peace to follow should see a democratic society in the sense in which the Socialists understood that term. Two examples may be given of the tendency of the circles of the left to criticize the government. The first was during the conquest of French North Africa when the U.S. authorities made an agreement with Adm. Jean Darlan and pursued what the radical London press called a reactionary pro-Vichy policy. The second belonged to a later period, when the British troops in liberated Greece were used to support the coalition government against the extreme radical elements of Greece (end of 1944). On this occasion, although an outstanding trade union leader, Sir Walter Citrine, had visited Athens and approved the action of the British military commanders, the Labour party in the house of commons showed extreme suspicion and on a division as many as 118 Labour members abstained from a vote of confidence which was carried mainly by the Conservative supporters of the government.

Economy of Total War.—The year 1942 was the most

critical period of the war after the survival from the invasion threat and the intensive bombing of 1940-41. The Japanese conquest of Malaya and Burma and Marshal Erwin Rommel's advance toward Alexandria roused the deepest apprehensions. But in the autumn there was a turning of the tide and the advance of the British army from El Alamein and the Russian advance from Stalingrad confirmed the British people in their belief in ultimate victory. During all this period to the very end of the war Churchill's ascendancy was absolute among the public, and when questioned or attacked in the house of commons he never failed to receive a vote of confidence. Even after the defeat in Africa he was supported by 476 votes to 25. There were no defections from the Churchill administration and fewer transfers of ministers from one office to another than in the years before the war.

The day-to-day life of the people of Britain was absorbed by two main concerns, security and production. Compulsory service in the home guard or in other defense service or in the national fire service maintained the force originally provided by voluntary enlistment. By the summer of 1942 the minister of production, Oliver Lyttelton, was able to state that British industrial production was at a far higher level than ever before in history. Two-thirds of the population between the ages of 14 and 65 were enrolled in whole-time service in industry, civil defense or the armed forces. Mechanical vehicles were being produced at the rate of 250,000 a year. In 18 months the production of aircraft calculated by weight increased two and a half times and the output of the shipyards by more than half. This work was accomplished with the aid of 5,500,000 women employed in factories. To make such war production possible the supply of civilian goods was reduced both in quality and quantity by government regulation. Clothes rationing had begun in the summer of 1941. Later simplified "utility" garments were manufactured which required less labour and material to produce. Books were published with narrow margins and on inferior paper, and the rationing of paper compelled publishers to limit severely issues of books even when in brisk demand. In July 1942 the small civilian "basic" ration of gasoline was brought to an end and only "essential users" could receive gasoline; they were bound, under penalties, to use their allocation only for the purposes and on the routes for which it was issued. Scores of thousands of cars were laid up until the end of the war. Business firms were often compelled by the government to concentrate only on certain kinds of production or even to close down in order that they might be taken over for war work. Manufacturers of foods and other commodities were "zoned" for distribution purposes and their products could be sold only in areas near the factory. Another method of saving transport was to "zone" retail distribution and dairies, laundries and other businesses arranged so that each firm would only serve a particular area. Competition began to disappear and the consumer lost his normal remedy of changing his dealer. Nonetheless, the public in general realized the sense and purpose of these measures and accepted them as a reasonable economy of effort.

The war presented a challenge to British agriculture greater than it had known since the end of the Napoleonic wars (1815). The Conservative government before World War II had encouraged production by subsidies for wheat and sugar beets. For war purposes the whole of agriculture became subject to government control. The ministry of agriculture in London and the departments of agriculture in Edinburgh for Scotland, and Belfast for Northern

Ireland prescribed the nature and areas of crops to be sown. In each county a war agricultural committee directed the farmers and gave technical advice and assistance. Food for direct human consumption was the chief aim of all these efforts. The area of land laid under the plow was increased; land which could not profitably be turned into arable in peacetime was plowed up, as a national necessity. As the health of the nation depended largely on milk production, every effort was made to maintain or increase the herds of dairy cows, to combat animal diseases and to improve the milk preservation in summer months. In 1942 milk consumption was as much as 15,000,000 gal. above the prewar average. The ministry of food by its rationing system ensured fair distribution. There was priority for nursing and expectant mothers, children and invalids; the average healthy adult had his milk supply seriously limited. The reports of the ministry of health throughout the war testified to the beneficial effects of "priority milk" on infants and school children. Summer time (one hour ahead of sun time) had been in operation in Britain from April to September after 1916, but in March 1941 a further measure was taken and for the period of midsummer the clock was advanced an extra hour. This was popular with the industrial population but added to the troubles of the farmers whose working hours depended on the sun. An increase in the arable acreage of 50% was achieved by British agriculture. Wheat acreage rose by 33%, oats by 60% and potato acreage by 100%. The sugar beet crop was sufficient to supply the civilian rations.

High-explosive and Rocket Bombs.—Direct attack on the British Isles ceased to be a serious danger to the national life, but day raids on the south coast and night raids inland continued to disturb the ordinary life of the people. In the summer of 1942 the Germans directed attacks on certain ancient cities, and these "Baedeker" raids did serious damage in Canterbury, York, Bath, Exeter and other places. Oxford, which had been prepared for attack, never received a raid, but some destruction was caused in Cambridge. Edinburgh was not subjected to any mass attack. In June 1944, however, just after the invasion of Normandy by Gen. Dwight Eisenhower's armies, a new and terrifying form of aerial attack was unloosed by the Germans. This took the form of the flying bombs styled by the Germans, the V-1 weapon. Kent, the south coast and the whole London area were within the range of these bombs, and the attacks could be continued by day as well as by night. In spite of the very prompt measures of defense by anti-aircraft fire, balloon and fighter aircraft, many flying bombs crossed the coast and roared on to their destination where, the propulsion failing, the bomb glided to earth and exploded. This new menace produced a further move of evacuation; many families who had returned from the safer areas once more left London and the southeast. Many older persons and children who had endured the night bombing were sent north and west by their relations. These attacks ended only with the occupation of the coast of France and Belgium by the Allied armies in the autumn of 1944. Just as this menace was disappearing there came another, which for many weeks was not mentioned by the authorities. This was the V-2 weapon, longrange rockets which approached at a speed faster than sound and were not therefore heard until they exploded. These, like the V-1 weapons, were directed mainly against London, whose inhabitants continued to suffer casualties and had to endure a further strain on their nerves and their vitality.

Last Phases of the War; Postwar Plans.-As the Allied

forces passed from defensive to offensive operations, important changes had to be made in the kind of munitions turned out in the factories, but this did not stop the rising volume of production. British economy was, however, seriously strained mainly as a consequence of gradually deteriorating coal production. The reduced numbers of workers in the coal mines were unable to maintain either the total volume of production or the output per worker. In 1943 output fell below the 1942 level and was further reduced by stoppages of work by the miners in certain areas. Coal-cutting machinery was in short supply, and in spite of attempts to provide better food for "heavy" workers, the men's physical condition was thought to be impaired. But the problem of coal mining was also a human and a political problem. The miners, living in their own little villages by the pits and feeling themselves to have suffered undeservedly from unemployment in prewar years, were the most difficult of all workers to deal with. The government by an "Essential Works Order" prohibited workers from leaving essential employment and this direction of labour had the support of the public as a wartime measure. It also had the effect of preventing an employer from dismissing an employee, and the managers alleged that it was ruining discipline. Additional bonuses for output and other in-

centives failed to arrest the fall in production. In Dec. 1943 the government decided to apply conscription of labour in the full sense of the word. A proportion of the men called up for military service were to be directed to the coal mines; they were to be chosen by ballot on enlistment. These conscripted miners became known as "the Bevin boys," so named after Ernest Bevin, then minister of labour. In 1944 the minimum wage for underground workers was raised from 83s. to 100s. but output further declined and occasional strikes continued. The problem of coal output continued into the time of peace and formed an increasingly serious danger to British prosperity.

As the prospects of victory brightened, the government began to lay down its plans for reconstruction and social betterment in times of peace. As a result of reports by committees of inquiry the government issued "white papers" containing statements of policy. These programs embodied a measure of agreement between the Conservative and Socialist wings of the coalition, but the Labour party could only accept them as an instalment of the socialism which they hoped to carry through after the war. They would not commit themselves to half-measures, however great the concessions might appear to be to the Conservative side. In the last resort, questions of principle were involved which only the electorate could decide. One great measure was put in the statute book. R. A. Butler, the minister of education, carried through an act extending and developing the school education, elementary, secondary and technical. This scheme was expected to take many years to fulfill. It provided for the raising of the minimum school-leaving age from 14 to 16 years as soon as the new buildings and the additional teachers of whom some 80,000 were required. could be found. The size of classes was to be reduced and women teachers were no longer required to resign on marriage. An amendment providing for equal pay for men and women teachers was carried against the government on the committee stage of the bill, but under strong pressure from the prime minister the house reversed this decision. A royal commission reported in 1946 on the implications of equal pay for men and women.

In the field of social security (q.v.) the government plan followed, but not completely, the scheme prepared

	Great Britain	s: Statistical Data	1945	
	Value	Amount or	Value	Amount or
Item	(000's omitted)	Number	(000's omitted)	Number
Exchange rate		£1 = \$4.889		£1 = \$4.03
Government revenues	£948,738 (\$4,638,378)			
Government expenditures	£919,949 (\$4,497,632) £326,427 (\$1,595,900)			
Gold reserves	£326,427 (\$1,595,900) £8,144,794 (\$39,819,899)	1		
Transportation	20,144,274 (407,017,077)	'		
Railroads		20,787 mi.		
Highways		192,673 " 4,005 "		
Airways		30,624 "		
Communication Telephones		3,220,241		
Telegraph and telephone lines .		14,217 mi.		
Radio sets		8,908,900		
Minerals Coal		254,257,920 tons		
Limestone		21,203,840 "		
Igneous rocks		13,283,200 "		
Iron Ore and ironstone Crops		13,282,080 "		
Turnips		12,043,300 "		
Hay		5,870,300 " 5,639,200 "		
Fodder beets		3.967.000 "		
Sugar beets		2,415,000 "		
Oats		2,195,300 " 2,166,300 "		
Livestock				
Poultry		74,246,050 26,775,421		
Cattle		8,761,877		
Swine		4,383,140		
Sea products Total		1,174,811 tons		
Cod		391,777 "		
Haddock		160,150 " 303,665 "		
Plaice		30,084 "		
Exports—total	£470,794 (\$2,301,711)	506,000 tons	£393,866 (\$1,587,280) £44,664 (\$179,997)	244,000 tons
Machinery	£57,872 (\$282,938) £41,559 (\$203,182)	2.111.000 "	£20,601 (\$83,023)	719,000 tons
Coal	£37,409 (\$182,894)	39,524,000 "	£6,649 (\$26,796)	3,724,000 "
Cotton cloth	£31,964 (\$156,271) £919,584 (\$4,495,847)	145,000 "	£28,815 (\$116,124) 4 £1,102,515 (\$4,443,136)	41,096,000 sq.yds.
Butter	£50,877 (\$248,739)	533,000 "	£31,748 (\$127,945)	213,000 tons
Raw wool	£41,000 (\$200,447)	441,000 " 2,635,552 gal.	£35,048 (\$141,245) £141,566 (\$570,510) 4	.,918,277,000 gal.
Wheat	£40,806 (\$199,501) £38,631 (\$188,866)	5,691,000 tons	£57,128 (\$230,226)	2,163,000 tons
Defense		000 500		4 000 000*
Standing army in personnel Reserves		208,500 365,000		4,000,000*
Standing navy personnel		112,000		250,000*
Reserves		59,848 83,000		250,000*
Reserves		25,000		250,000
Military expenditures	£248,517 (\$1,215,000)		£1,393,995 (\$5,339,000)	
Education Elementary schools		4,595†		
Enrolment		5,959,783		
Secondary schools		1,725 641,205		
University enrolment		56,770		
*1940.				
tin addition, 29,988 departments	under separate head teach	iers.		



Trafalgar square, London, in May 1945, as the streets filled with celebrants rejoicing at victory in Europe

by Sir William Beveridge which was to cover all the contingencies of life from birth to death, by children's allowances; marriage, sickness and injury benefits; assistance in unemployment and widowhood and funeral grants to dependents. The estimated cost was £650,000,000 in the first year, as opposed to £441,000,000 spent on the then existing social insurance schemes, and it would rise by steps to £831,000,000 of which the state would pay £557,000,000, the remainder coming from individual contributions.

End of the Churchill Coalition.—By the spring of 1945 it became clear that with the advance of the Allied armies into Germany from east and west the nazi reich would soon collapse. The nation then expected to pass through an extended period during which the war in the Pacific would absorb most of its efforts; yet with peace in Europe some attention could be paid to reconstruction. The parliament elected in 1935 was by then ten years old; since the 17th century there had not been so long an interval between general elections. A general election was therefore expected. Churchill, however, made one attempt to maintain the coalition with a suggestion that the all-party government might be kept together until the end of the Japanese war and that the continuation of parliament until that period might be morally ratified (it required no legal ratification other than the usual Prolongation of Parliament bill) by a plebiscite of the whole electorate. Attlee and Sir Archibald Sinclair both refused to agree, and the Labour party conference which met at Blackpool in May 1945 rejected all further co-operation with Conservatism. Churchill then resigned his office, a step which involved the resignation of the whole ministry, and was commissioned by the king to form a new administration. He at once formed a cabinet, called a "caretaker government" consisting almost exclusively of Conservatives and that section of the Liberals, called "Liberal Nationals," who had co-operated with Conservatives before the war. Some eminent individual nonparty men, notably Sir John Anderson, the chancellor of the exchequer, also remained in office.

The wartime parliament had prepared carefully for the postwar elections. Arrangements had been made for voters absent on active service to vote by post or by proxy. In order to give time for the service vote to come in there was an interval of three weeks between polling day and the day on which the votes were counted. Absent voters' ballot papers were distributed and collected as far afield as Burma. The Conservative party presented 624 candidates for the 640 seats to be filled: the Labour party presented 604 and the Liberal party was able to put up only 307. There were only 21 Communist candidates. The election was felt by the public to be primarily a conflict between Conservatives and Labour, a conclusion fatal to the Liberals whose policies were not unpopular and generally respected.

The British system of election is by a simple plurality without any possibility of transferring the vote from one candidate in the event of his polling the lowest vote, to another. It was feared, therefore, that votes given to candidates other than Conservative and Labour would be wasted. There was a general feeling among the public that the nation would not reject Churchill, whose lead it had followed so loyally during the war. On the other hand Labour was expected to gain considerably. It fought with great confidence and nerve and the equalizing effects of war and the promises made by all of vast

social improvements turned people's eyes to Labour. The Conservatives had been in power with two very short intervals since the end of World War I and could not evade reproaches for "having lost the peace." On foreign policy there was not very wide disagreement between the main ideas of the two parties, but the Labour party claimed to be in a better position than the Conservatives to get on with the U.S.S.R. Labour stood for fully developed state ownership and control of industry, the first objective being the nationalization of the coal mines.

The result astonished all but a very few farseeing observers. With 392 seats, Labour commanded nearly two-thirds of the house while Churchill had only 213 supporters (the National Liberals included). There were 12 Liberals and only 2 Communists. The rest were independents or members of very small groups. The popular vote showed that 48% had voted Labour, 40% Conservative and "National Liberal," and 9% Liberal. The "swing" from Conservative to Labour, that is to say, the decrease in the Conservative vote compared with the preceding election (1935) and the increase in the Labour vote was 12%. Attlee, though, was in clear command of the house of commons. At seven in the evening of July 26, 1945, Churchill resigned and a few minutes later Attlee was asked by the king to form a new government.

Immediate Postwar Period.—The record speed with which the government changed hands was due to the fact that Attlee had to go to Potsdam at once and represent Great Britain in the discussions with President Truman and Marshall Stalin. No sooner was the new government installed in office than the use of the atomic bomb brought the Japanese war to an unexpected end. The plans of the government had to be suddenly adjusted to deal with peace in both hemispheres. As much as 55% of the country's labour force was engaged in war production; 5,350,000 men and women were in the armed forces, of which more than 2,000,000 were serving overseas. Demobilization was begun and based on length of service with priority for certain skilled workers and stu-

Prime Minister Clement Attlee and the archbishop of Canterbury (right) at Cambridge university, where each was awarded an honorary degree in June 1946. Preceding them were a herald and standard bearer



dents who had to go in for a long period of training. Large forces were still required for garrison duty and defense in many parts of the world. On Aug. 20, 1945, President Truman terminated the operation of the lend-lease agreements with a suddennness that came as a shock to British opinion. The war had resulted in the disposal by Britain of more than £2,000,000,000 of overseas investments and sterling. Balances due to other countries had accumulated to the amount of £4,000,000,000. On this single count the war had cost Britain more than £6,000,000,000. Negotiations were set afoot for a loan from the United States.

This was approved by parliament with some misgivings in Dec. 1945 and ratified by the U.S. congress in the summer of 1946. Britain was thus assisted in tiding over the period of postwar reconstruction and given a chance to restore its export industries.

The Socialist government proceeded without delay to operate its plans of nationalization. Acts of parliament provided for the transfer to the state, against payment of compensation, of the Bank of England, the coal mining industry, cable and wireless communications and civil aviation. These industries were now to be controlled by boards of management appointed by ministers of the crown. Sir Stafford Cripps, the Labour president of the board of trade, set up inquiries, under the name of working parties, into many other industries, such as cotton, pottery, boots and shoes, and furniture. At the end of 1946 legislation was introduced for the nationalization of all transport industries, i.e., railways, canals, long-distance road haulage and port facilities (docks). The Conservatives offered strong opposition to these measures, but the government with its majority of nearly two to one carried the program through smoothly. The building of houses had been the issue most canvassed at the general election and the new minister of health, Aneurin Bevan, decided to encourage municipal authorities rather than private enterprise to build the maximum number of houses. Prefabricated houses were to be used to meet the acute need. During 1946 the government's housing program moved slowly forward and was the object of much criticism. The lack of any new construction for six years, the destruction of more than 200,000 houses and the damaging of more than 4,300,000, made the satisfaction of the public demand for houses extremely remote. The cost of living threatened to rise on account of many wage increases but was kept down by government subsidies on essential foods. In Oct. 1945 it stood at slightly more than 30% above its prewar level. Austerity conditions still prevailed. A basic gasoline ration was restored in June 1945 and increased a year later. Clothing and other forms of rationing continued and in July 1946, John Strachey, the food minister, was compelled to introduce bread rationing. Hopes that this would be of short duration were dispelled by transport difficulties in the U.S.A. and elsewhere and by a calamitously wet summer which reduced the yield of the British harvest. The problem of fuel grew more acute in spite of a slight increase of coal production and the year 1946 closed with threats of industrial stoppages for lack of fuel and frequent cuts in electricity supplies. The first remissions in taxation were made by Dalton, the Labour chancellor, in April 1946 in the form of a cut of 1s. in the pound in income tax and more generous allowances for married men and small wage earners.

Labour's Foreign Policy.-Problems in the British em-

pire were acute and the Labour government, in fulfilment of its pledges to make India fully self-governing, authorized the viceroy, Lord Archibald Wavell, to bring together a government representing Moslems and Hindus. A special mission of cabinet ministers was sent to India to try to induce the rival Indian parties to co-operate, but with little success. The Hindu leader, Pandit Nehru, and the Moslem leader, Mohammed Ali Jinnah, came to London at the end of 1946 for a conference with the government, but the Moslems were not willing to trust to Hindu leadership. Dissension and civil war seemed possible. Already there had been widespread riots in various parts of India causing grievous loss of life.

At the end of World War II, the British people found that the Palestine problem was more acute than ever because of the large number of Jews who sought admission to that country. The British, as the mandatory power who had in the past to maintain a strong line against the Arabs, now found themselves denounced as national enemies by the Jews, and Jewish terrorists committed many outrages against the British troops.

The foreign policy of the government under Bevin had wide support, but in the same measure as the soviet government in its statements and policies became unfriendly British policy moved in close concert with the United States while making every effort to conciliate the U.S.S.R. A considerable volume of criticism descended on Bevin from a section of left-wing Socialists. In Oct. 1946 a group of Labour members of parliament challenged Bevin's policy in a debate in the commons but did not vote against the government. This disagreement was

serious, but the Labour movement on the whole supported the government and the opposition also approved Bevin's policy. The peace conference at Paris was long and contentious and the public viewed with alarm its protracted and acrimonious debates. When, however, the matters were transferred to meetings in New York city, there was an improvement as soviet policy seemed to relax. Bevin, before leaving the U.S.A. for his return to London, struck a note of optimism and declared that the "sun of peace would rise in 1947." (See also WORLD WAR II.)

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Milk depot set up for "squatters" at a fashionable apartment building in London. Squatter tenancy was a quietly spontaneous movement which grew out of the housing shortage and spread throughout England in 1946



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Great Lakes Traffic

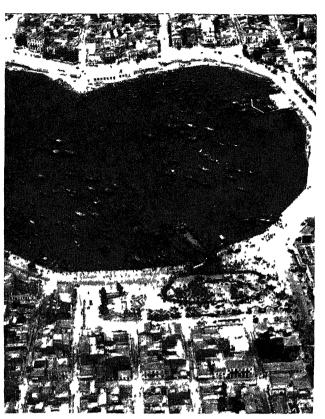
See Canals and Inland Waterways; Rivers and Harbours.

Greece

A kingdom in the southern part of the Balkan peninsula. Area: 50,150 sq.mi. of which 41,328 are mainland; pop. (1928 census) 6,204,684; (1940 census) 7,344,860; (est. Dec. 31, 1946) 7,150,000. Chief cities (1940 census): Athens (cap. 481,225); Peiraeeus (205,404); Salonika or Thessalonike (226,147); Patras (79,570); Volo (54,919). Languages (1940 census): Greek 7,065,716; Turkish 133,-671; Albanian 25,100; Macedonian Slav 23,974; Koutsovlach (Rumanian) 23,845; Spanish* 22,725; Armenian 13,-075; Bulgarian 5,893; other 31,421. Religions (1940 census): Greek-Orthodox 7,090,192; Roman Catholic 29,136; Protestant 6,338; Mohammedan 134,722; Jewish* 67,591; other 17,441. King: George II (Sept. 27, 1922–Dec. 18, 1923, and from Nov. 25, 1935). Prime ministers: General John Metaxas (June 3, 1936–Jan. 29, 1941); Alexander Korizis (Jan 29, 1941-April 18, 1941); Admiral Alexander Sakellariou (April 20, 1941-April 21, 1941); Emmanuel Tsouderos (April 21, 1941-April 3, 1944); Sophocles Venizelos (April 14, 1944-April 25, 1944); George Papandreou (April 25, 1944-Jan. 2, 1945); General Nicholas Plastiras (Jan. 2, 1945-April 8, 1945); Admiral Petros Voulgaris (April 9, 1945-Nov. 1, 1945); Panayotis Kanellopoulos (Nov. 1, 1945-Nov. 21, 1945); Themistocles Sophoulis (Nov. 21, 1945-April 1, 1946); Panayotis Poulitsas (April 4, 1946-April 18, 1946); Constantin S. Tsaldaris (after April 18, 1946).

Experiment in Authoritarianism.—The year 1937 found the dictatorship, proclaimed by General John Metaxas (on Aug. 4, 1936), already in its second year. Some of the articles of the constitution of 1911 had been suspended, parliament dissolved and the leaders of the old political parties forbidden to take part in any form of public life. The dictatorship united all the political parties, whether of the right, centre or left, in opposition. No member of the Populist party, the principal royalist party, consented to join the government. Some of its leading members, notably John Theotokis, who, together with General George Kondyles, had been instrumental in bringing back the king in 1935, were placed under arrest. The various sections of the Liberal (Venizelist) party were also uncompromising in their opposition to the regime. Andreas Michalakopoulos and George Kafandaris, both of them former Liberal prime ministers, were exiled respectively to Paros and Zante.

In July 1938 there was an attempted uprising in Crete



British fleet in the port of Peiraeeus near Athens, shortly after the start of Allied operations in Greece, Oct. 1944. Athenians crowded the docks to welcome the new arrivals

led by Aristomenes Mitsotakis, a nephew of Eleutherios Venizelos, which, however, was suppressed without much difficulty.

The Metaxas dictatorship had all the features common to the authoritarian regimes of those days in the Balkans and elsewhere, namely suppression of political liberty, police rule, a controlled press, a government organized youth movement, etc. The objective critic, however, was bound to recognize certain material achievements of the regime. The most outstanding was undoubtedly the reorganization of the armed forces for which Metaxas, himself a distinguished staff officer, had all the qualifications.

The political dissensions of the republican period (1924–35), with the frequent military pronunciamientos by rival groups of army officers, had undermined discipline, destroyed the unity of the army and distracted the attention of the higher officers from professional to political issues.

An extensive system of fortifications, known as the "Metaxas line," was built along the whole length of the Graeco-Bulgarian frontier so as to protect eastern Macedonia and western Thrace against attack. The endurance of these fortifications, which had cost Greece the sum of 6,000,000,000 drachmae, was proved against the Germans in April 1941. Despite furious attacks by heavy armour and dive bombers the forts, manned by their heroic garrisons, held out successfully until the whole position was outflanked and taken in the rear by the German forces which had penetrated into Greece through Yugoslavia and reached Salonika via the Stroumnitsa and Vardar valleys. It is also doubtful whether Greece could have stood up with success to the Italian attack in 1940 had it not been for the thorough reorganization undergone by the Greek

^{*}Mainly Salonika Jews; most of these were deported and "liquidated" by the Germans in 1943-44.

armed forces during the previous five years, and this must be put down to Metaxas' credit.

The navy likewise was reorganized. Airfields, too, were enlarged and multiplied, the stores were gradually replenished, and a small but competent air force created from nothing. New planes and material were ordered.

Side by side with this intensive reorganization of the armed forces with which, given the then international situation, no one, whatever his political views, could well find fault, the years before World War II were a period of steady progress in all the fields of economic activity. In the sphere of social legislation, collective contracts fixing minimum rates of wages for manual and office workers were introduced in a large number of industries and other enterprises. The eight-hour day was generally adopted, compulsory holidays with full pay were widely applied, the organization of social insurance was developed. In general, it may be said that, during this period, Greece made considerable strides along the path of social reform. Against the above, must, of course, be set the restrictions imposed on the free functioning of the trade union movement by an authoritarian regime.

In foreign affairs, the policy of the Balkan Entente, begun under previous governments, was maintained. The bonds with Turkey, already drawn closer by the Graeco-Turkish agreement of Sept. 14, 1933, would, it was hoped, guarantee the security of Greece's northeastern territories in the event of a Bulgarian attack. After the Italian occupation of Albania in April 1939, which was immediately followed by the British guarantee to Greece, the latter, though continuing to maintain correct relations with the axis powers, found itself drawn closer and closer to Great Britain, though no formal alliance was concluded.

Economically, on the other hand, Greece, like the rest of the countries of southeastern Europe, was inevitably drawn into the German orbit through a system of barter, introduced by Hjalmar Schacht, which compelled countries exporting to Germany to take German goods in payment through the operation of blocked mark accounts. As Germany was Greece's principal customer for its main export commodity, tobacco, this could hardly be avoided, particularly as the British cigarette manufacturing interests were obdurate in their refusal to purchase Greek tobacco.

In 1940 the international situation, as affecting Greece, began rapidly to deteriorate. A violent press campaign, accusing Greece of fomenting trouble in Albania, was launched in Italy. It was obvious that Italy was bent on provoking Greece into taking action which might be used as a pretext for an attack. Thus on Aug. 15 the Greek light cruiser "Helle," while lying at anchor off Tinos during the celebration of the Festival of the Assumption, was sunk by a torpedo from an unknown submarine afterward proved by the fragments of the torpedo to have been Italian. Despite this knowledge, which was kept secret, the Greek government kept its head and repressed what might have been a premature outburst of public indignation.

Italy's Military Fiasco.—On Oct. 28, 1940, at 3 A.M., the Italian minister, Emanuele Grazzi, woke up the Greek premier and handed him an ultimatum demanding that Italian forces should be allowed to occupy strategic points on Greek territory for the duration of the conflict with Britain. Greece was accused of tolerating the use of its territorial waters and ports by the royal navy as well as of permitting the British intelligence service to operate in the Greek islands against Italy. The ultimatum was peremptorily rejected by Metaxas, who telephoned at once to the

Greek frontier posts on the Albanian border warning them of the impending Italian attack and instructing them to

A few hours later Italian troops, aided by Albanian irregulars, invaded Epirus. During the first few days they penetrated deep into Greek territory through the Pindus gorges, whence they were finally thrown back in disorder across the Albanian frontier through the heroism of the Greek troops, aided by the inhabitants of the mountain villages. While the left wing of the Greek army, under the command of General Alexander Papagos, advanced into northern Epirus and occupied Argyrokastro, the right wing, by a series of brilliant operations, advanced into Albanian territory from western Macedonia and occupied the important Italian base of Kartcha and shortly after took Pogradec, on the western shores of Lake Okhrid.

The Greeks had been united, as never before, in resisting the Italian aggression. All the leaders of the political opposition, without exception, declared themselves solidly in favour of the policy of the government. With the exception of the secretary general of the Greek Communist party, Nicholas Zachariades, no discordant voice was heard in favour of yielding or compromise. It was one of the greatest moments in Greek history.

In Jan. 1941 the entry of German troops into Bulgaria presaged the coming intervention of Italy's German ally in the Balkan conflict. The attitude of Prince Paul, regent of Yugoslavia, was vacillating, and this materially increased the perplexities of the Greek and British high commands who, before the German threat, were faced with the agonizing problem of whether to abandon eastern Macedonia and Salonika or to defend them. Metaxas had informed the British government that Greece would resist a German attack as it had resisted the Italian aggression. On Jan. 25, 1941, Metaxas died and his successor, Alexander Korizis, reaffirmed his predecessor's decision.

Submission to German Might.—On April 6, 1941, German forces attacked Greece from Bulgaria, while Yugoslavia was simultaneously assailed from three sides by German, Italian and Hungarian forces. Between March 7 and April 2 a British expeditionary force comprising British, Australian and New Zealand troops, under the command of General Sir Nigel Maitland (later Lord) Wilson, landed in Greece and was transported to positions in Macedonia on the Olympus-Vermion line, as previously arranged. But the forces were too uneven. The Germans were greatly superior in armour and air power. Further, the rapid collapse of the Yugoslav army left the way open for a German penetration into Greek Macedonia through the Vardar and Tcherna valleys. The Greek army on the Albanian front, whose rear was threatened by the German advance, capitulated on April 22.

As the Germans swept through central Greece toward Athens, it was decided that King George II, with the government, should withdraw to Crete which it was hoped would be held. Korizis, Metaxas' successor, committed suicide a few days before the Germans entered Athens. The king appointed as his successor Emmanuel Tsouderos, a former governor of the Bank of Greece, who belonged to the Liberal party. On April 27 the Germans occupied Athens.

Great hopes had been based on the possibility of holding Crete. But superiority in the air enabled the German high command, by an airborne operation, to seize the airfield at Malamé near Canea. The British and Greek forces were unable to hold the island and had to be evacuated to Egypt, together with the king and government, at the end of May.

In exile, the lawful Greek government, headed by the

king, who after a three months' stay in Cairo went to London in Sept. 1941, continued the struggle and the small Greek military, naval and air forces, reorganized and re-equipped with British help, fought bravely by the side of their British allies in the western desert, in the Mediterranean and later in Italy, at Rimini.

Special mention must be made of the contribution of the Greek merchant marine to the Allied cause. From the beginning of the struggle Greece had placed the whole of its merchant fleet at the disposal of the Allies. Most of the Greek ships were employed in the transport of food and supplies from the United States to the British Isles. Of the total Greek naval tonnage, that is, 434 ships totalling 1,361,332 tons, 75% were sunk, a crippling loss for the Greek economy. (See also World War II.)

The Occupation.—Inside Greece, the Germans set up a Greek government of their own choosing under General George Tsolakoglou, one of the corps commanders on the Albanian front, who, against orders, signed the capitulation of the Greek army in April 1941. Not a single one of the leading politicians who had remained behind took part in this quisling government, which was composed of second-rate men of no political standing.

After the occupation of Athens and the Peloponnesus, the Germans handed over the administration of southern Greece, Epirus and the islands (except Crete and the islands opposite the Turkish coast) to the Italians under General Carlo Geloso. They themselves remained in occupation of central and western Macedonia, with Salonika, Crete and the port of Peiraeeus. The Bulgars were allowed to occupy eastern Macedonia and Thrace as a reward for allowing the German army to pass through Bulgaria in order to attack Greece and Yugoslavia. Thus Greece was parcelled out into a number of watertight compartments under different military administrations, a fact which added greatly to the hardships of the occupation. There was no free movement of goods and persons between the various zones which were severally exploited by each occupying power for its own benefit. Further, the Italians, whose avowed intention it was to annex the Ionian islands (Corfu, Cephalonia, Zante), placed these islands under a separate administration and embarked on a policy of partial assimilation. The Cyclades also were separated from the jurisdiction of the Athens government and placed under the governor general of the Dodecanese, with headquarters at Rhodes.

The whole country was subject to a policy of ruthless exploitation. Immense quantities of foodstuffs and stocks of raw materials and manufactured articles were removed by the invaders and sent to Germany, Italy and Bulgaria or to Erwin Rommel's army in North Africa which was largely supplied from Greece. As the result of this policy there was wholesale famine and starvation during the first winter of the occupation (1941-42). With no food coming in from outside and with most of the local supplies drained off by the armies of occupation, there was very little left for the civil population. The mortality in Athens, the islands and the poorer parts of the country increased dangerously. This situation was only partially relieved when, as the result of strong appeals made by the Greek government in exile, the British government in the spring of 1942 agreed to relax the blockade and allow the import into Greece of wheat and a few other essential foodstuffs. These supplies were imported in Swedish ships and distributed under the control of the International Red Cross. This saved the Greek population from starva-

Resistance Movements.—Already in the first year of the

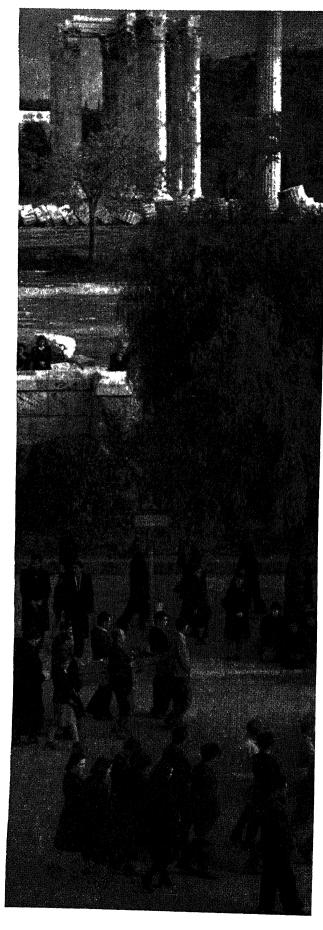
occupation a number of underground resistance movements had sprung up in various parts of the country. Espionage and sabotage were organized on a large scale by secret organizations mostly directed by Greek officers acting in liaison with the Greek government in Cairo and British headquarters in the middle east. Large numbers of British officers and men belonging to the British expeditionary force, who had found themselves cut off at the time of the evacuation, were hidden and helped to escape by the Greek population. There were numerous arrests and executions from this cause.

Early in 1942, bands of guerrillas began to be formed in the more mountainous regions of central Greece and the Peloponnesus. Some of these were purely patriotic and nonpolitical while others were organized by political parties. The most important patriotic organizations were E.D.E.S. (Ellenikos Dimokratikos Ethnikos Stratos, or Hellenic Democratic National army) under Gen. Napoleon Zervas, operating up in the northwest (Epirus), and E.K.K.A., (National Social Liberation army) under Colonel Dimitrios Psaros, operating in central Greece. On the other hand the Greek Communist party, in co-operation with certain other left-wing elements, organized their own bands, later grouped under a single military formation under Gen. Stephen Seraphis known as E.L.A.S. (Ellenikos Laikos Apeletherotikos Stratos, or Greek Popular Liberation army), which had ramifications all over the country.

In the early stages of this movement many persons, both among the peasantry and the bourgeois classes, joined E.A.M. (Ethnikon Apeletherotikon Metopon, or National Liberation Front), a left wing resistance group, under the impression that it was a purely patriotic organization. It was only later that the policy pursued by this organization, which aimed at monopolizing the resistance movement and eliminating all competitors by force, revealed its political objectives and the fact that it was dominated by the communists. The capture and murder of Colonel Psaros, leader of E.K.K.A., by the communist guerrilla leader Aris Voulouchiotis did a great deal to open the eyes of the public.

All the guerrilla bands, of whatever political complexion, received arms, equipment and financial assistance in gold from the British middle east command which also attached British liaison officers to the local guerrilla commands in various parts of Greece. During the earlier stages of this guerrilla warfare some important feats were performed, such as the blowing up of the Gorgopotamos bridge on the main railway from Athens to Salonika, thus disrupting the axis' communications. Later, however, the disadvantages of guerrilla bands operating independently and without responsible control became apparent. Desultory attacks on small axis contingents, of no great military value, resulted in severe reprisals, in the destruction of hundreds of villages, the killing of innumerable hostages and the massacre of whole populations. The feeling throughout the countryside which bore the brunt of these reprisals gradually turned against the bands. There were appeals to the German-controlled government in Athens for protection. This was the origin of the so-called security battalions organized by the Rhallis government (the third and last of the quisling governments) which in March 1943 succeeded the government of Professor Constantine Logothetopoulos, himself the successor of Gen. Tsolakoglou (in Dec. 1942).

House Divided.—The various rival resistance movements had been in a state of civil war since Oct. 1943.

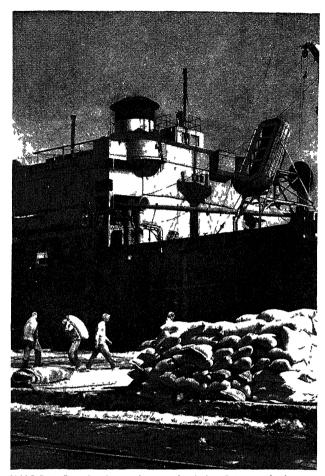


This state of things began to cause serious anxiety to both the Greek and the British governments. Appeals for unity were made over the radio by Emmanuel Tsouderos, prime minister of the Greek government, who returned to Cairo in March 1943. In the meantime, the extreme left, assisted by certain officers belonging to the republican centre, began to create disaffection in the ranks of the Free Greek forces in the middle east. This came to a head in the spring of 1944, when there were a number of lamentable mutinies among the Greek forces in the middle east and in the Greek fleet at Alexandria. These mutinies did immense harm to the national cause and were universally denounced within Greece itself.

After these events, the king accepted the resignation of Sophocles Venizelos (son of Eleutherios) who shortly before had succeeded Tsouderos as premier, and on April 25, 1944, entrusted George Papandreou, leader of the Social-Democratic party, who had but recently been brought out of Greece, with the formation of a government. On the latter's initiative, an all-party conference of members of all the Greek political parties and resistance groups was held in the Lebanon mountains (May 18-21, 1944). Its purpose was to attempt to solve the various political differences with a view to the formation of a broad-based government of national unity. Papandreou's program was accepted by all the parties, including, after considerable delay, the E.A.M. and the Communists. Eventually the new government of 25 members, which was finally constituted on Sept. 2, included seven representatives of the extreme left, the most important of whom were Alexander Svolos and Militiades Porphyrogenis. Shortly afterward the Greek government moved from Cairo to Caserta where, on Sept. 24, 1944, under the auspices of Sir Nigel Maitland Wilson, commander in chief of the Allied forces, an agreement was concluded (known as the Caserta agreement) under which the rival guerrilla organizations consented to place themselves under the authority of the Greek government and under the command of Maj. Gen. Ronald MacKenzie Scobie, designated to command the British forces about to liberate Greece

Liberation and Civil War.-At the time of the liberation of Greece (Sept. to Oct. 1944) the government had at its disposal only the few regular troops brought over from Italy and Africa, that is, the Mountain brigade and Sacred battalion, together with a small force of gendarmerie. As against these, there was a much larger E.L.A.S. guerrilla force, under E.A.M. control, in the Peloponnesus and central Greece, and General Zervas' small national force (E.D.E.S.) in Epirus. E.L.A.S. refused to comply with the terms of the Caserta agreement to place itself unreservedly under the orders of General Scobie. While the Germans were still in full retreat toward the north, E.L.A,S. bands began converging on Athens with a view to seizing power and establishing a communist-controlled government. On Dec. 2 the six E.A.M. ministers resigned from the government rather than sign a decree demobilizing the guerrilla forces. On Dec. 3 disorders broke out in Athens, and E.L.A.S. attacked the British and government forces. For a time the rebels were in nearly complete control of the capital and interior of the country. Great excesses were committed by their followers; it was only the timely intervention of the British troops commanded by General Scobie which, in the words of Winston Churchill, averted

Greek mourners following a funeral cortege of antigovernment demonstrators past the columns of the Temple of Zeus, Athens, in Dec. 1944



U.N.R.R.A. flour for Greece being unloaded at Peiraeeus harbour in 1945

a "horrible massacre" in Athens.

After Churchill's, Field Marshal Sir H. R. L. G. Alexander's and Anthony Eden's dramatic visit to Athens on Dec. 25, 1944, the British government intervened in a conciliatory spirit with a view to ending the bloodshed. As a first step in this policy of appearement and as a concession to the demands of the extreme left, the king, still in London, was persuaded to surrender his powers provisionally to Archbishop Damaskinos of Athens, who was appointed regent of Greece on Dec. 31. Papandreou resigned at the height of the troubles on Jan. 2, 1945, and was succeeded by a "strong man" in the person of General Nicholas Plastiras (the former leader of the revolutionary junta of 1922). A series of round-table conferences held between representatives of the government and the rebels ended in the conclusion of the Varkiza agreement (Feb. 12, 1945). This granted an amnesty for political offenses (but not for common law crimes) committed during the period of the troubles. It also provided for the disbanding of all E.L.A.S. troops and the surrender of their arms. Another stipulation was for a purge of the public services to be carried out after the holding of elections. The agreement laid down that, first, a plebiscite should be held on the question of the king's return and, later on, elections be held in the course of the same year. This order was later reversed under pressure from the left, who demanded immediate elections and the postponement of the plebiscite to a later date.

During the interval between the signature of the Varkiza agreement and the holding of the elections there was a succession of "service" governments presided over by

Admiral Petros Voulgaris, Panayoti Kanellopoulos and finally Themistocles Sophoulis, leader of the Liberal party, each holding office for only a few months (or weeks). It should be noted that all the above governments, appointed by the regent, were drawn from the republican centre, without any participation of the Populist party, which, although commanding a strong support throughout the country, remained out of office. As it became more and more evident that public opinion, under the influence of the excesses committed by the communists and their allies during the December troubles, was running strongly against the left, the extreme left, faced with the prospect of a resounding defeat at the polls, began to clamour for a postponement of the elections. This clamour influenced the attitude of the Sophoulis government, in power after Nov. 21, 1945, which not only committed itself to a postponement of the date of the plebiscite to 1948 but also seemed inclined to defer the elections to a later unspecified date. It was only under strong pressure from the Allied governments, and especially Great Britain, that the Sophoulis government was finally persuaded to hold the elections on March 31, 1946. In protest against the above decision the Communist and other parties of the left abstained.

Elections and Plebiscite.—The elections, as was foreseen, gave an overwhelming majority to the Populist party, that is, the principal royalist party, of conservative tendencies, which secured 206 out of 354 seats. The right centre parties (republican) led by Papandreou, Venizelos and Kanellopoulos, secured 68 seats, while the Liberals (republican) under Sophoulis secured only 48 seats. The remainder of the seats went to two small independent royalist groups led by General Zervas and Th. Turkovassilis. After the Populist victory at the polls, C. S. Tsaldaris was elected to the leadership of the Populist party and, in his capacity as head of the government and foreign minister, subsequently led the Greek delegation at the Paris peace conference.

The new chamber, the first to be elected since the suppression of parliamentary government by Metaxas on Aug. 4, 1936, had as its specific mandate to revise the constitution of 1911. At the same time the electors had made it quite clear that they desired an early proclamation of the plebiscite on the question of the king's return.

One of the first acts of the new assembly was to fix the date of the plebiscite for Sept. 1, 1946. This time the parties of the left did not abstain and, together with the Liberals, came out strongly in support of the republic. The plebiscite gave 70% in favour of the immediate return of the king and 30% against. The voting was: in favour of the king 1,170,470, against 523,086. Independent observers appointed by the British and the U.S. governments to supervise the elections and observe the plebiscite gave it as their opinion that both had been fairly conducted with a minimum of irregularities. On Sept. 28 King George II, who had been absent from his country since the German invasion in April 1941, made a triumphal entry into his capital.

* * *

No picture of Greece during the decade 1937–46 would be complete without some description of the devastation caused by World War II, a devastation which, owing to its extent, was bound to weigh heavily on the economic development of the country for at least a generation. The capital equipment of the country, laboriously built up

by the thrift and enterprise of two generations of Greeks, had been almost entirely destroyed. To take the railways and road system first, nearly all important bridges, tunnels and other major works were demolished by the axis; so

•			•	
		e: Statistical Data 1938		1945
Item	Value	Amount or	Value	Amount or
Exchange rate	(000's omitted)	Number	(000's omitted) Number
U.S		rachma =0.89 cei) to 555 drachma		*
Finance				
Government reve	. (£26,603)			
Government ex penditures	- \$135,323 , (£27,679)			
Gold reserves	(£27,679) \$31,926 (£6,530)			
National debt	, \$460,513 (£94,194)			
Transportation	(2074), (74)	1015		
Railroads		1,815 mi. 5,148 "		
Navigable water	-	4 "		
Communication Telephones		49,872		
Telegraph lines	•	14,702 mi.		
Radio sets	•	55,000†		
Pyrite ore (sulphu	r	268,961 tons		
content)	•	130,738 " 3,4 39,176 lb.		
Bauxite ore Crops	•	198,288 tons		
Wheat	•	1,084,112 "		
Vines (for wine) . Barley	•	270,615 "		
Corn Vines (for dried	•	219,909 "		
raisins) Livestock	•	208,004 "		
Sheep	•	8,138,772		
Goats	•	4,356,120 967,322 587,998		
Mules and asses. Forest Products.	•	587,998		
Colophony§	\$1,620‡ (£328)	•••		
Turpentine§	\$671‡ (£136)	•••		
Mastic§	\$284‡ (£57)	•••		
Sea Products				
Sponges§	, \$326‡ (£66)	•••		
Manufactures Textiles		•••		
Chemical	\$32,876 (£6,724) \$26,417			
	(£5,403)	•••		
Food	\$21,024 (£4,300) \$10,302	•••		
Electrical	\$10,302 (£2,107)			
Exports Total	\$90,916	•••	\$2,047*	3,953 tons
Horticultural prod	(£18,596)		(£508)	
ucts	(£13,174)	•••	\$2* ()	102
Oils and waxes	\$8,220 (£1,681)	•••	\$1* (¶) \$11*	43
Mineral products .	\$4,328 (£885)	•••	\$11* (£3)	340 "
Wines, spirits, beverages	ICE/O	•••	\$17* (£4)	91 "
Imports Total	\$132,233		\$1,376*	10 407 #
	(£27,047)	•••	(£341)	10,477
Agricultural products	(£5,102)	•••	\$208* (£52)	2,362 "
Metals and manu- factures	\$23,744 (£4,857)	•••	\$25* (£6)	671 "
Yarns and textiles .	\$16,868 (£3,450)	•••	\$46* (£11)	893 "
Defense			(2011)	
Standing army per- sonnel	•	79,796		320,000♀
Reserves Standing air force	ı	501,500		275,000♀
personnel Reserves		2,21 <i>5</i> 4,535		1,660♀ 4 ,500 ♀
Military expendi-	\$45,659 (£0.330)	.,,500	\$25,530	4,0004
Education	(£9,339)	W 10	(£6,666)	
Kindergartens Students		743 38,338		
Primary Schools Students		38,338 8,339 985,018		
High Schools		407		
Students Universities		92,687		
Students *5,000 drachmae = +1030 +1037 &	\$1.00 in Jan. 10	7,230 947: value used to	compute 1045	trada A
†1939. ‡1937. §	Exports only.	(£497). ¶(£243	3). \$1940.	aae tigures.

were the installations of the two principal ports, Peiraeeus and Salonika. The transport system was crippled by the destruction or removal of nearly all the railway and rolling stock, motor vehicles, coastal steamers and sailing boats. The losses in ocean-going merchant ships have already been mentioned. The Corinth canal, main artery of communications between Peiraeeus and western Greece, was blocked by the Germans at the moment of their retreat in Sept. 1944, by dumping into it a large number of locomotives and railway carriages and blowing in the sides. In the countryside some 1,400 villages were destroyed and more than 1,000,000 people rendered homeless. One of the heaviest losses to the country's economy was the devastation of forests over an area of nearly 2,000 sq.mi., representing one-quarter of the total forest area. Agriculture also suffered a heavy blow through the wholesale removal of agricultural machinery and the destruction of livestock which in most categories averaged 60%. To the above capital losses must be added the confiscation by the invader of an important stock of raw materials, foodstuffs, tobacco and manufactured articles, and the annihilation of all savings through the inflation of the currency which reached fantastic proportions under the occupation. The losses in human lives were also heavy in proportion to the population. Although no official figure was available by the end of 1946, they were estimated to be in the neighbourhood of 500,000.

Further, the health of the remaining population was undermined by undernourishment and privation resulting in an enormous increase of tuberculosis, malaria and other diseases. (C. S. T.)

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Greek Literature (Modern)

See CENTRAL EUROPEAN AND BALKAN LITERATURE.

Green, William

Green (1873-), U.S. labour leader, was born March 3, 1873, in Coshocton, O. He spent much of his youth as a miner, and at the age of 27 was a subdistrict president of the United Mine Workers of America. He was international secretary-treasurer of the U.M.W.A. from 1912 to 1924, and in the latter year was elected president of the American Federation of Labor. Under Green's administration, the A.F. of L. remained predominantly a crafts union. When the Committee for Industrial Organization (later known as the Congress of Industrial Organizations), a group of ten unions affiliated with the A.F. of L., opened its campaign to establish industrial unions, Green refused to sanction the operation. This led the C.I.O., under the guidance of John L. Lewis, to break away from the parent body in 1937. The A.F. of L. and the C.I.O. engaged in frequent jurisdictional disputes, and Green repeatedly denounced the Roosevelt administration, and particularly the National

Labor Relations board, as prejudiced in favour of the C.I.O. In Jan. 1942 Green and Philip Murray (who had succeeded Lewis as head of the C.I.O.) accepted Pres. Roosevelt's proposal that both unions agree to a labour truce for the duration of World War II.

Green generally declared himself against the principle of government intervention in labour-management affairs; he and the A.F. of L. opposed the wage-hour act in 1937 as well as the war-time legislation for the compulsory arbitration of industrial disputes. He was also opposed to communist activity in the trade unions; when the World Federation of Trade Unions conference was organized in 1945, Green declined to join primarily because of the inclusion of soviet trade union representatives. One old feud was officially terminated in Jan. 1946 when John L. Lewis, dissatisfied with C.I.O. policy, brought back his United Mine Workers into the A.F. of L.

Greenland

Greenland, the world's largest island (839,782 sq.mi., some 705,000 covered by glacier), is in the North Atlantic ocean, N.W. of Iceland. A Danish possession, it came under temporary United States protection in 1941. Capital, Godthaab. A population of about 18,000 (est. 1941) is scattered in small settlements on the west coast, and 1,000 on the east coast, about 600 in all being Danes, the rest native Greenlanders. Seats of the governors are Godhavn in the north and Godthaab in the south.

Climate and geographic isolation, plus sparseness of people and resources, made Greenland an unusually dependent colony. Denmark carefully regulated commerce and maintained a trade monoply, yet its rule was considerate and farsighted. Throughout World War II, local administration in the island remained in the hands of the Danish officials. However, communication with Denmark was entirely cut off, and new trade relations had to be established, chiefly with the U.S., to provide the necessities of life for the Greenland population.

Strategic Importance.—The significance of Greenland in the military situation during World War II was based primarily on two geographic factors: (1) The location there of the world's only cryolite mines, ore vital in the manufacture of aluminum, which in 1942 was taken from Greenland to Canada and the United States in quantity sufficient to pay for all the country's necessary imports; (2) The location on "Greenland's icy mountains" of the source of much of the weather conditions and weather reporting for the North Atlantic and much of Europe. By possession of meteorological stations there, the United Nations were enabled to plan their operations much more effectively than would otherwise be possible-and Germany was at the same time deprived of the opportunity of forecasting accurately the weather even over western Europe. A third factor of minor importance was that bases could be set up in Greenland from which to attack or to protect Atlantic shipping.

Hence Greenland could no longer live by itself. By 1940, Americans had begun to reread the Monroe Doctrine, had found that it laid a protective mantle over north as well as south, and the U.S. sent a consul to Godthaab.

In March 1941 the Germans extended their declared "war zone" to Greenland's three-mile line. A few days later, the U.S. consul reported a nazi bomber over Greenland, then another war plane. Reports reached Washington that the Germans were preparing in Norway an expedition to conquer Greenland.

Agreement with U.S.-Within two weeks (April 9, 1941)

Danish Minister Henrik de Kauffman signed the following agreement with U.S. Secretary of State Cordell Hull:

Art. 1. The U.S. recognizes the sovereignty of Denmark over Greenland; since there is danger that Greenland may become a point of aggression against the American continent, the U.S. accepts the responsibility to assist Greenland in the maintenance of her present status.

Art. 2. The U.S. may construct and maintain such landing fields, sea-plane facilities, radio and meteorological installations as may be necessary to accomplish the purposes of Art. 1.

Art. 3. Provisions of Art. 2 shall include the right to construct roads, deepen harbours, build fortifications, repair and storage facilities, housing.

Art. 4. The facilities so constructed will be available to all the American nations for purposes of defense of the western hemisphere.

Art. 5. The U.S. will have the right to lease necessary land and sea areas, but will give the fullest consideration consistent with military safety to the welfare of the native population of Greenland.

Art. 6. Denmark retains sovereignty over the defense areas, but during the term of the Agreement the U.S. shall have jurisdiction over such areas and over all military and civilian personnel therein except Danish citizens and native Greenlanders.

Art. 7. The U.S. may establish postal and commissary facilities, which on request of Greenland authorities may also serve the native population.

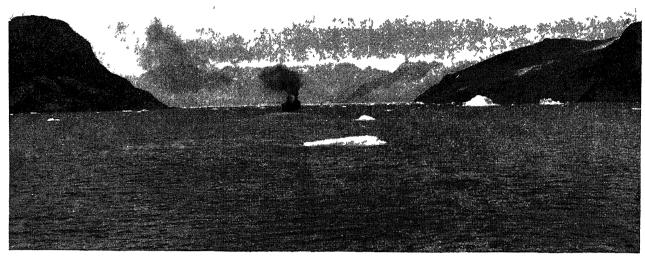
Art. 8. All materials brought in for the construction and use of the defense establishment shall be free of customs duties or other taxation; the personnel and their families shall be exempt from all forms of taxation or levies by the Danish authorities in Greenland.

Art. 9. The U.S. will respect all legitimate laws and customs of the native population and the Greenland administration.

Art. 10. The Agreement shall remain in force until it is agreed that the present dangers to the peace and security of the American continent have passed. At that time the modification or termination of the Agreement shall be the subject of consultation between the government of the U.S. and the government of Denmark. After consultation either party may give notice of termination, which shall take effect 12 months after such notice.

The agreement was entered into after consultation with the democratically elected councils of Greenland. Virtually, the United States had established a temporary protectorate over Greenland. The Germans protested and the nazi-controlled government of Denmark voided the agreement and recalled the minister. But De Kauffmann stayed on in Washington. He admitted that he had acted without orders, only "in the interests of the king of Denmark," and that the government knew nothing of the agreement until it was a fait accompli. He stated that he had come to the U.S. to represent his king and a free people, and that that was what he was continuing to do. The significant fact was that the United States and a "free Dane" official had made a far-reaching decision.

Minor War Operations.-One of the small but important actions of the war took place in 1943 off Greenland's east coast, where for the second time in two years a German weather station was demolished. When a U.S. army sledge patrol spotted this new nazi base on an island off the coast the Germans knew they would be attacked. The nazis captured two of the patrol, however, and killed the third man. Then they attacked a hunting and weather station to the north operated by Danes, most of whom escaped in the darkness. One, made prisoner, was forced to guide the German lieutenant on an exploring trip; he watched for an opportunity, overpowered the nazi, and after a 40-day sledge trip handed him over to army custody. Two U.S. coast guard cutters forced their way slowly through the ice toward the base, and planes bombed the installations as early as May. The bombings



First U.S. occupation forces entering a fjord in Greenland early in July 1941, three months after President Roosevelt announced American protectorate over the island in April 1941

destroyed all but one of the carefully built structures of the post, and sank the German supply ship. When the coast guard force arrived no Germans were left, though at other points the Americans took two prisoners. Presumably the rest of the force had been evacuated by plane.

Again in 1944 the value of Greenland as a weather reporting station was signalized. The persistent nazis had come back with increased forces, and with equipment for long occupation. In the late summer and early fall of 1944, Danish patrols discovered, and U.S. army combat groups destroyed, German shore installations and the U.S. coast guard attacked German ships and forces. Nearby, off Cape Sussi, a nazi trawler was discovered gutted by fire; here were indications that the garrison had been supplied by parachute. A month later the two U.S. ships engaged in this operation (the "Northland" and the "Storis") chased another trawler for 70 mi. through the ice and captured the crew after they had scuttled their vessel, and after a German plane (perhaps from Norway) had failed in its attack on the Americans. Sailors from the "Eastwind" destroyed a German radio-weather station on Little Koldewey Island, near the north pole. With the aid of a scout plane, the "Eastwind" and "Southwind" then found and brought to bay another German trawler, the "Externsteine," and this time captured her intact and brought the ship to Boston, Mass. In these various operations about 60 Germans were captured.

It was obvious that only eternal vigilance would keep the Germans away from the area which was regarded as the key to the weather of the North Atlantic and even of continental Europe.

The agreement of 1941 between Secretary of State Cordell Hull and Minister Henrik de Kauffman had of course been undertaken without Danish governmental sanction, and had been declared void by the Germans. Immediately upon liberation, therefore, the Danish cabinet and a few days later the Rigsdag (parliament) ratified the four-year old document by unanimous vote in both houses (May 16, 1945). Foreign Minister Christmas Moeller spoke of the treaty as "President Roosevelt's handshake with Denmark." In Oct. 1945 it was announced that the army air forces weather service would give four of its

Greenland stations to Denmark. The loyalty and interest of the Greenlanders was indicated by their gift of 40,000 Kr. (about \$10,000) to the British in 1942 to aid in the liberation of the Danish motherland. Already, in July 1945, the "Disko," first ship direct from Denmark since 1940, had arrived in the colony amid great rejoicing. Reconversion was proceeding.

In the summer of 1946 a small fleet of three U.S. navy and coast guard ships penetrated the Arctic ice floes into the far northern port of Thule, on Smith sound above Baffin bay—only 950 mi. from the north pole. It was a training and weather research expedition, composed of icebreakers and a seaplane tender, commanded by Capt. Richard H. Cruzen, who had been second in command with Admiral Byrd in the antarctic 1939—41.

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Greenland. Statistical Data, 1938

Item Exchange rate	Value (000's omitted)	Amount or Number		
United States		1 Danish Krone		
Great Britain		=21.8 cents 22.4 Kroner =£1		
Finance				
Government revenues	\$1,143* (£234) \$1,143* (£234)			
Minerals	•			
Cryolite		48,501 tons†		
Coal		1,047 ,, † 7,716 ,,		
Sea products .		7,7.10 ,,		
Total		3,989 tons†		
Cod (salted) Whale & seal oil		2,001 ,, †		
Other Fish (Prepared)		924 ,, † 185 ,, †		
Exports—Total	\$1,894 (£387)	•		
Ci yolile	\$1,518 (£310)	55,000 tons		
rish octish products	\$187 (£38)	3,000 tons		
Imports—Total	\$669 (£137)			
Ceredis, Flour, Bredd	\$107 (£22)	•••		
	\$82 (£17)	•••		
*In 1940 Revenues \$1,165 (£304); Expenditures: \$1,165 (£304).				

Greensand GREENSAND ★ GROMYKO

The sales of greensand in the United States, for use in water softening, during the years 1937-45 were as follows:

	Short tons		Short tons		Short tons
1937	9,734	1940	6,697	1943	10,056
1938	6,576	1941	10,120	1944	4,908
1939	6,466	1942	10,111	1945	4,986
				(G. A. Ro.)

Greenwood, Arthur

Greenwood (1881-), British politician, was born in Yorkshire, England. He attended University college in Leeds, subsequently becoming a lecturer in economics there. In 1917 David Lloyd George appointed Greenwood assistant secretary of the reconstruction committee and in the same year made him one of the secretaries at the ministry of reconstruction. He joined the Labour party in 1920 and was elected to parliament in 1922. In the Ramsay MacDonald government of 1929, Greenwood was minister of health and also a privy councillor. He lost his parliamentary seat in the general elections of 1931, but was returned during a by-election the following year. Upon formation of the wartime coalition cabinet in 1940, Winston Churchill appointed Greenwood minister without portfolio; he held this post until 1942. He returned to the government, July 27, 1945, as lord privy seal in the Clement Attlee cabinet. The following month, quieting fears that the new Labour government would dislocate British economy with too rapid socialization, Greenwood declared that in spite of its long-range plans for socialization the government would consult and enlist private enterprise for immediate critical necessities.

Grenada

See WEST INDIES, BRITISH.

Grew, Joseph Clark

Grew (1880-), U.S. diplomat, was born May 27, 1880, in Boston, Mass., son of a banker. He was graduated from Harvard university in 1902 and after a period of travel in the far east, entered the U.S. foreign service. He held a number of minor posts in Cairo, Mexico City, St. Petersburg (Leningrad) and Berlin. After World War I he was made envoy extraordinary to Denmark in 1920 and to Switzerland in 1921.

Grew represented the United States at the Conference on Near Eastern Affairs at Lausanne, Switzerland, 1922–23, and negotiated a treaty with Turkey in 1923. The following year, he was named undersecretary of state. His next appointment was that of ambassador to Turkey in 1927, a post he held until 1932, when his appointment as ambassador to Japan was announced by President Herbert Hoover.

Generally, Grew was friendly and conciliatory in his relations with the Japanese and took the stand that all questions between the Japanese and the United States could be settled amicably. Disturbed by Japanese encroachments in China and the far east, however, he warned the Tokyo government in 1939 of U.S. resentment over Japanese methods. As early as Jan. 1941 he cabled the state department that Japan had plans for a "surprise mass attack at Pearl Harbor in case of 'trouble' with the United States."

After this attack occurred in Dec. 1941, Grew and his staff were interned in Tokyo and returned to the United States on the exchange ship "Gripsholm" in the summer of 1942. He was reappointed undersecretary of state Dec. 20, 1944, amid controversy that arose over his attitude

that the emperor of Japan could be retained on the throne and have his uses. He resigned as undersecretary of state on Aug. 16, 1945.

Griffin, Bernard William

Cardinal Griffin (1899-), archbishop of Westminster, was born at Birmingham, England, on Feb. 21, 1899. Educated at Cotton and Ascott colleges, he interrupted his studies at the age of 19 to enlist in the royal air force. He returned to school after World War I, was ordained at 25, and continued his studies at the English and Beda college in Rome. Back in England, he became secretary to Archbishop McIntyre of Birmingham, and later to Archbishop Williams, whose auxiliary he became in 1938. He had been chancellor of the archdiocese from 1929 to 1938. At the age of 44 he was named Archbishop of Westminster, succeeding Cardinal Hinsley. His jurisdiction as ordinary of the see extended over much the same area as that of the bishop of London. As chief metropolitan, he occupied a position similar to that of the archbishop of Canterbury before the Reformationprimate of all England.

During World War II he urged a just and lasting peace. He was the first member of the foreign hierarchy to visit Germany upon the cessation of hostilities; he congratulated the German bishops on their splendid resistance to the Nazis. His outspoken criticism of Russian domination of the provisional Polish government provoked the protests of the Russian press. Archbishop Griffin was proclaimed cardinal by Pope Pius XII on Feb. 18, 1946.

Grindstones

See ABRASIVES.

Gromyko, Andrei A.

Gromyko (1909—), Russian diplomat, was born July 5, 1909, in the village of Stayre Gromyki in the Gomel region of Russia. After graduation from the Minsk Institute of Agricultural Economics in 1934, he became a member of the scientific staff of the Institute of Economics of the Academy of Science of the U.S.S.R. He remained in this academic post until May 1939, when he was appointed chief of the division of American countries in the People's Commissariat of Foreign Affairs. A few months later he resigned to become counsellor of the U.S.S.R. embassy in Washington. He served in this capacity under Ambassador Constantine Oumansky until 1941, then under Ambassador Maxim Litvinov.

When Litvinov was recalled from Washington in Aug. 1943 as an expression of soviet displeasure at the failure of the U.S. to open a second front in the European war, Gromyko succeeded him as Russian ambassador to the U.S. and also to Cuba. In Aug. 1944 Ambassador Gromyko headed the soviet delegation at the Dumbarton Oaks conference. He also attended the San Francisco conference (April-June 1945) that drew up the United Nations charter, and became chief of the Russian delegation after Vyacheslav M. Molotov, the soviet foreign commissar, returned to Moscow. As the chief soviet delegate to the United Nations organization, he attended the opening session of the general assembly in London on Jan. 10, 1946. He was also named Russian representative on the Far Eastern commission. One of the most significant and dramatic events in the opening session of United Nations Security council occurred when Gromyko walked out of the council session after rejection of the Russian

proposal for postponement of the Iranian question; he was absent from the council from March 27 to April 4, 1946. One week later he was relieved of his post as ambassador in order to devote all his time as the permanent soviet representative to the council.

Groves, Leslie Richard

Gen. Groves (1896—), U.S. army officer, was born Aug. 17, 1896, in Albany, N.Y. He studied at the University of Washington, Seattle (1913–14), the Massachusetts Institute of Technology, Cambridge (1914–16) and entered the U.S. Military academy at West Point, N.Y., graduating in 1918. Commissioned a second lieutenant in the engineers corps, he served with the A.E.F. in France for a three-month period in 1919. On returning to the United States, he studied at the Army Engineer school, Camp Humphreys, Va., in 1921.

After a number of assignments abroad he enrolled in the Command and General Staff school, graduating in 1936. He was also graduated from the Army War college in 1939. In Nov. 1940, he was raised to the temporary rank of a colonel and later became deputy chief of army construction.

Groves was promoted to the rank of brigadier general in 1942; the same year he was made head of a new war department division, called the Manhattan Engineer district. Until the first atomic bomb was dropped on Hiroshima, Aug. 6, 1945, the "district" operated under strictest secrecy; on that date it was disclosed that the Manhattan project, under Groves' supervision, had directed production of the atomic missile.

Groves, whose temporary rank was major general in 1945, was appointed assistant to the army chief of engineers, and on Dec. 29, 1945, the army and navy created a joint advisory board to work with Groves on the atomic board project. Ten days later (Jan. 7, 1946) Secretary of State James Byrnes named Groves to a newly created five-man committee whose task it was to study atomic controls and to "fully protect" U.S. atomic interests.

Groza, Petru

Groza (? —), Rumanian politician, was a Transylvanian landowner before he entered politics. After Rumania's liberation from the German armies in the late summer of 1944, Groza became vice-premier in Gen. Nikolai Radescu's cabinet. After Radescu had been forced out by soviet authorities Groza, head of the left-wing National Democratic front, became premier (March 6, 1945).

One of Groza's first actions was to ask Premier Joseph Stalin for the return of Transylvania to Rumania; Stalin promptly granted this request. On March 15, 1945, Groza emphasized that no Transylvanian population exchange with Hungary was envisaged because that would be a "fascist solution." In domestic affairs Groza pushed through enactment of agrarian reforms, which included expropriation of property of *Volksdeutsch* and war criminals. Church and crown property were exempted from the decree.

The political opposition, meanwhile, charged that Groza was ruling by terrorism, that freedom of the press was forbidden and that the opposition was not permitted to have a voice in the government. In order to correct this lack of political "balance," the three-power Moscow agreement signed by Ernest Bevin, James F. Byrnes and Vyacheslav Molotov in Dec. 1945 provided that the Rumanian govern-

ment was to be broadened by inclusion of opposition members. However, the U.S., Britain and Rumanian oppositionists later charged that Groza's government, far from relaxing its restrictive measures against other parties, was tightening its control through the agency of the National-Democratic front, allegedly under control of Rumanian communists. In the elections of Nov. 1946, the Groza government bloc won an overwhelming majority of seats in the one-chamber parliament. The opposition claimed that the elections were fraudulent.

Guadalcanal

See SOLOMON ISLANDS; WORLD WAR II.

Guadeloupe

See French Colonial Empire.

Guam

The discovery of Guam by Magellan on March 6, 1521 and its cession to the United States at the end of the war with Spain by the Treaty of Paris on Dec. 12, 1898, were both significant events. Yet there was perhaps no period in the history of this small island of approximately 210 sq.mi. more eventful than the decade 1937–46.

Prior to World War II, relatively little was generally known about Guam. It was considered a lonely naval outpost and was thought of primarily in connection with the almost continuous congressional debate as to whether the island was to be "fortified." The misconceptions relating to the bill to "fortify" Guam were characteristic of the vague general impressions in relation to the island, as the controversial "fortification" bill was to authorize nothing more than the dredging of Apra harbour.

The effect of the Pacific war on Guam was immediate. The Japanese forces occupied the island on December 12, 1941 and administered it under military government until the U.S. forces began the reoccupation of the island on July 20, 1944.

Since Guam, despite its approximate 30-mi. length and average of 7-mi. width, was the most sizable land area in the north latitudes between Hawaii and the Philippine Islands, it was destined to be used as an advance base for further operations against Japan and the Japanese forces.

In the midst of almost complete destruction, Guam was immediately converted into a U.S. base of enormous proportions. Within a very short time after its liberation, numerous airfields had been constructed, harbours had been dredged out, whole towns and villages had been relocated, a completely new network of roads had been constructed and an almost unlimited amount of supplies had begun to flow into the island.

From the time of the liberation of Guam until the final surrender of Japan, the island was used as a major base of military operations. It was from Guam that the commander in chief of the Pacific fleet and Pacific Ocean areas mounted and directed operations in the later stages of the war in the Pacific.

The impact of the war profoundly affected the life of every one of the approximately 23,000 Guamanians living on the island. The devastation incident to hostilities completely demolished most of the towns and villages, and all forms of agriculture and business were for the most part destroyed.

In order to alleviate the conditions imposed by the war, congress, upon cessation of hostilities, enacted a bill to compensate the residents of Guam for deaths, personal injuries and private property damages incident to these hostilities. A city planning commission was set up to assist in

the rebuilding and re-establishment of the towns and villages in accordance with modern principles of construction, comfort, convenience and economic utility. In addition, an appropriation was made by congress for the rebuilding and restoring of public facilities in the various towns and villages destroyed during the war.

In addition to this physical change, the gradual modification in the culture and economy of Guam before World War II was given an immediate impetus by the Japanese occupation of the island and the subsequent reoccupation by large numbers of U.S. military personnel.

This modification was particularly notable in the economy of the island. Prior to the war, copra production was the principal industry of Guam. It accounted for the greater portion of the export trade. During the war, the coconut plantations were in great part destroyed. While efforts were made to recultivate and replant the coconut groves, agricultural recovery was not very rapid in the immediate postwar period. The labour supply was engaged in the reconstruction of destroyed homes and towns and in activities relating to the military establishments, where more remunerative employment could be secured.

Efforts were made to diversify the postwar economy of Guam by the inauguration of an experimental farm and the introduction of animal husbandry projects. A soap factory was established, and various wholesale and retail establishments were reopened. Yet the largest and the most remunerative employers on Guam were the military establishments.

Significant developments also took place in education. A program of vocational training was inaugurated in order to assist in adaptation of local inhabitants to the changed economy of the island. It was largely oriented around the subjects of gasoline motors, electricity and electrical appliances, plumbing and other mechanical trades necessary to life in a modern city and employment in military establishments

Opportunities for higher education were expanded. A new school for native medical practitioners offered a four-year course in general medicine. Similarly, a school of dentistry was established. Both schools were open to students from Guam and other islands in the Pacific, including the former Japanese-mandated Marianas, Marshall and Caroline Islands. Scholarships to educational institutions in the United States were also made available to a limited number of Guamanians.

Conditions imposed by the war thus contributed to accelerate greatly the gradual process of cultural assimilation, the totality of which was now almost inevitable. (See also Marianas Islands.)

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		Guam: Statistica	l Data		
		193	38	19	40
Îtem		Value (000's omitted)		Value (000's omitted)	
Finance Government revenues Government expenditures				\$329* \$319*	
Crops (Field) Corn	•		,017 tons† 420 tons† 244 tons†		
Livestock Poultry					211,424 14,089
Exports—Total	•	\$150	• • •	\$103	•••
Copra and Coconut Oil products		\$107	•••	\$51	•••

Guam, American Samoa and Other Island Possessions Administered by the Navy Department, Navy Dept. (1946).

(A. B. MD.)

Guatemala

The northernmost Central American republic, Guatemala is bounded by Mexico, British Honduras, the Caribbean sea, Honduras, El Salvador and the Pacific ocean. Area: 42,353 sq.mi., technically in doubt because of a boundary dispute nominally existing between Guatemala and British Honduras. Pop. (1943 official est.), 3,450,732; the pop. by the census of 1940 was 3,283,209; other official pop. ests. were: 1938, 3,044,490; 1941, 3,384,270. Racial distribution was estimated to be at least 60% Indian, approximately 30% mestizo and less than 5% white; Guatemala is the most heavily Indian of all the Central American republics. The population is most densely settled in the highland regions near the Pacific side; pop. density was estimated in 1943 to be 82.07 per sq.mi. The capital is Guatemala City (pop. est. Jan. 1, 1946, 185,896); other cities (with 1946 pop. ests.) include Zacapa (53,262), Escuintla (47,444), Quezaltenango (45,711), Jalapa (45,174), Cobán (44,165), Coatepeque (26,733), Puerto Barrios (26,-003), Antigua (22,839); these figures in some cases showed very large increases over the census figures of 1940 and in such instances were probably open to question.

The constitution of March 11, 1945, established a unitary government with an executive branch headed by a president chosen by popular election for a 6-year term and ineligible for 12 years thereafter, a council of ministers of state under partial responsibility to the legislative branch, a unicameral congress and a judiciary headed by a supreme court of justice, the members elected by the congress. The constitution included an extensive bill of rights and attempted by elaborate provisions to prevent any return of presidential domination or dictatorship. Presidents during the decade 1937-46 included Gen. Jorge Ubico (1931-July 1, 1944); Gen. Federico Ponce (July 4-Oct. 20, 1944); a revolutionary junta composed of Maj. Francisco Javier Arana, Capt. Jacobo Arbenz and Jorge Toriello (Oct. 20, 1944-March 15, 1945); Dr. Juan José Arévalo (after the latter date).

Ubico's "Continuismo."—Gen. Jorge Ubico, generally recognized as the strongest of the various Central American dictators of the 1930s, began a second six-year term as president of Guatemala on Feb. 15, 1937, his term having been extended in July 1935 to March 15, 1943. In compliance with his famous ley de probidad, which he wrote into the Guatemalan constitution as well as into statute and which required all office holders to file sworn statements of personal assets upon entering and leaving office, he took occasion to make public a statement of his own and his wife's personal fortunes and incomes. Guatemala and El Salvador signed a treaty on April 9, 1938, defining their mutual boundary, thus ending satisfactorily a controversy of long standing.

Conditions in Guatemala continued quiet in 1939, but with a significant growth of anti-foreign sentiment. In March the government placed severe restrictions on business activities conducted by foreigners and tightened immigration laws in order to reduce foreign control of commerce. All foreign political groups were ordered dissolved in May, and the government in October issued formal warnings to German radio officials to confine their broadcasts in Guatemala to the truth. The number of Germans in Guatemala was not large (estimated at 1,500 Germans

and 2,200 citizens of German descent), but their thorough group organization and aggressiveness caused increasing concern to the government.

Also in 1939, Guatemala revived a long-dormant boundary controversy with Great Britain over the border with British Honduras. The controversy dated back to a treaty between Guatemala and Great Britain in 1859 in which the former government agreed to recognize the existing boundaries of British Honduras in return for British assistance in constructing a road from Guatemala City to the Caribbean. Guatemala now claimed that Great Britain had failed to comply with that provision, thus invalidating the treaty, and that Guatemala was hence entitled to its former claim of some two-fifths of the territory of southern British Honduras.

Fear that began to crystallize in 1940 that Guatemala might be used as a centre for the dissemination of German propaganda throughout Central America resulted in the development of closer relations between Guatemala and the other American republics. The economically influential German minority in Guatemala controlled about 55% of the country's coffee plantations and 60% of the coffee acreage, as well as many business firms in Guatemala City and elsewhere. Two presidential decrees in 1939 barred the nazi party and nazi propaganda from Guatemala, and, as a further precaution, the cities were patrolled by armed soldiers and the rural areas by motorcycle police. The government forbade meetings by political parties. Great Britain in Jan. 1940 formally offered to submit to arbitration the question of the disputed British Honduran boundary, but no immediate steps were taken by either side. When the problem of the possible collective attitude of the New World republics toward an expected attempt on the part of Germany to gain control of French, Dutch and perhaps British possessions in Middle America was discussed at the second inter-American foreign ministers' conference at Havana, Cuba, in July 1940, Guatemala concurred in the proposal for "provisional administration" over such colonies but made an exception with regard to British Honduras because of her dispute over that territory.

A constitutional assembly at Guatemala City in Sept. 1941 was responsible for another example of continuismo by extending Pres. Ubico's term to March 15, 1949. The chief problems of 1941, however, were those related to the war and hemispheric defense. War preparedness measures included strict licensing of strategic mineral exports, establishment of a school of modern military tactics, deportation of the Guatemalan correspondent of the nazi Transocean news agency, expulsion of German consuls and withdrawal of Guatemalan consuls from Germany and, as a climax, declarations of war on Japan on Dec. 7 and on Germany and Italy on Dec. 11. The United States' blacklist of axis firms in Latin America resulted in a boycott of German business, especially of coffee producers. The government froze funds of the German-owned coffee plantations. The dispute with British Honduras remained technically alive, although Guatemala announced in 1941 that it would not press its claim for the duration of the

The policy of co-operation with the inter-American war effort continued during 1942. The government took over axis properties and levied a special tax on them for defense purposes. Coffee plantations owned by axis nationals were continued in operation, in order to maintain production at proper levels, but placed under the direction of the Central Bank of Guatemala. Pres. Ubico decreed the

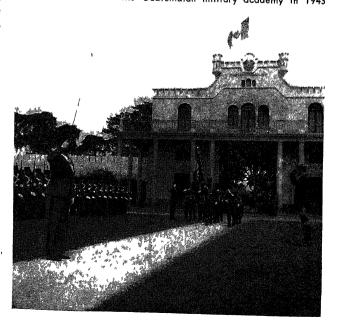
establishment of a civil guard, composed of men from 50 to 60 years of age, to combat subversive activities. One of Latin America's largest military airports was built in Guatemala, and United States patrol bombers operated from it. The government also ordered all importation of United States currency ended in order to prevent its use by axis agents. Shortages of consumer goods were serious, because of lack of shipping, although this was slightly remedied by completion of a bridge in Feb. 1942 over the Suchiate river, thus affording much better railway connections with Mexico. The government early in the year froze gasoline and tire stocks and began rationing them in July. Price ceilings on some imported articles were set, and rent controls were instituted in May.

Guatemalan conditions continued relatively quiet in 1943, with little change in policies. The chief effects of the war were felt in rising living costs, estimated at as much as 40% above 1941; the increase was explained by the augmented income from a profitable coffee year and the export of foodstuffs to the Canal Zone, as well as by the diminishing supply of consumer goods. Various regulatory controls remained in effect, such as the freezing of rents and certain imported items, gasoline rationing, prohibition of the export of cattle and some other products and a moratorium on car payments.

Fall of Ubico.-The year 1944 proved to be one of the most turbulent in later Guatemalan history. A successful general strike directed in May against the dictatorpresident of neighboring El Salvador, Gen. Maximiliano Hernández Martínez, produced a state of nervous anticipation in Guatemala. Pres. Ubico tried certain steps, such as expropriation of German-owned property on June 24, to try to stave off an explosion, but without notable success. Demands for reform presented by university students were met by a suspension of certain constitutional guarantees. This resulted almost spontaneously in a general strike, and conditions were highly critical late in June. Ubico on June 28 paid off two important items of the foreign debt, \$1,316,000 in dollar bonds and the sterling debt of £1,520,432. Despite a seeming betterment in the political crisis he suddenly withdrew from the presidency on July 1.

A military junta succeeded immediately to power and on July 4, 1944, Gen. Federico Ponce, one of the junta mem-

Cadets on review at the Guatemalan military academy in 1943



bers, was elected provisional president. Ponce on July 11 set presidential elections for mid-December. Some other reforms followed, but the impression gained ground that Ponce was another potential dictator and would perpetuate himself in power. The principal early candidates for the presidency were Adrián Recinos, recently resigned as ambassador to the United States, and Dr. Juan José Arévalo, for many years a voluntary exile in Argentina. The party organization and newspaper which had represented Ubico still continued in a favoured position and Ubico himself, who had remained in Guatemala City, was of continuing influence. The political pattern was basically a conflict between civilian and military elements.

Growing suspicion of Ponce led to a conspiracy in October between civilian elements and young army officers to overthrow the government. It came to a head in a bloody revolt on Oct. 20, 1944, led by a junta consisting of Maj. Francisco Arana, Capt. Jacobo Arbenz, and a civilian, Jorge Toriello. After several hours of vigorous fighting and dramatic negotiating, Ponce and his cabinet resigned, later going to Mexico. The junta took prompt and energetic steps to reform the government and from the beginning had widespread popular support; it received diplomatic recognition after a short trial period, To institute a more democratic government, successive elections were held for a new legislative assembly (Nov. 3-5), a president (Dec. 17-19), a constituent assembly to draft a new constitution (Dec. 28-30) and municipal officials (Jan. 7, 1945). The presidential elections attracted more attention than any of the others and proved to be a landslide for Dr. Arévalo, who won with 256,514 votes to 20,550 for his next closest opponent. By action in June and again on Aug. 14, the government expropriated various types of axis-owned property. Guatemala signed two agreements with the United States in September, one for completion of the Guatemalan section of the inter-American highway, the other for control of typhus and malaria. Work on a military highway through Guatemala and other Central American states, undertaken by U.S. army engineers, had been suspended the preceding year, and Guatemala was later given \$1,500,000 worth of equipment in lieu of the completion of a section of the roadway to the Mexican border. Guatemala modified its Chinese exclusion law in April 1944 by changing to a quota system. On May 3 it partially reopened the dispute over the British Honduran boundary by its announcement that it would expect the United States to use its good offices to bring about a settlement of the problem.

The constituent assembly opened its sessions Jan. 10, 1945, and in the short time of two months completed its work, in time for the inauguration of Dr. Arévalo on March 15. On Jan. 23 the revolutionary junta demanded that former Pres. Jorge Ubico return to the treasury a "bonus" of \$200,000 paid him by the national assembly in 1940; the demands against Ubico were later raised to a total of \$587,000. As the former president failed to take action within the 30 days granted him, the government took steps to confiscate his Guatemalan properties, The government on Feb. 11 arrested eight opposition leaders, including officials of Adrián Recinos' Democratic party, and at the same time it "invited" Recinos to leave the country; all of the persons were either charged with or suspected of conspiracy. Pres. Arévalo on his inauguration in March appointed three members of the former revolutionary cabinet to his own cabinet; Jorge Toriello, the forceful civilian member of the revolutionary junta, was subsequently named by Arévalo to the key post of finance minister. The government in April 1945, less than 30 days

after Arévalo's inauguration, suspended constitutional guarantees for one month, because of a "reactionary conspiracy," and developments later in 1945 indicated that authorities were assuming an increasingly severe attitude toward the political opposition. Further activities by opposition parties were banned on June 19 and in that month and July numerous persons were exiled. The government again suspended constitutional guarantees late in October, with the state of siege (martial law) lasting 60 days and with some 60 persons taken into custody.

On Feb. 21, 1945, the government expropriated a Pan American Airways subsidiary, Aerovías de Guatemala, and later reorganized it on a nationalized basis under the name of Aviateca. Other nationalistic and similar actions and legislation followed. On April 21 an economic emergency law was passed which penalized speculation in essential goods and authorized control of rents, prices, wages and imports. In May the government began preparation of a comprehensive labour code and also of laws promoting co-operatives. A law of May 22 revised regulations regarding agricultural labour. A labour congress met in August and the national labour organization, in accordance with action by the congress, joined the Confederation of Latin American Workers (C.T.A.L.).

Postwar Foreign Relations.-The most significant development of 1945 in the field of foreign affairs was probably the changed relation with Spain. Guatemala broke diplomatic relations with the Francisco Franco regime on Jan. 23 and was thus the first American government to take this action (Mexico had never established relations with Franco). The Guatemalan government on Sept. 10 extended diplomatic recognition to the Spanish "government-in-exile" established at Mexico City. On Feb. 28, the Guatemalan delegation at the inter-American conference at Mexico City proposed that "undemocratic" regimes should not be recognized. An exchange of notes at Washington, D.C., on April 19 established diplomatic relations between Guatemala and the soviet union. The boundary controversy with British Honduras resulted in further diplomatic correspondence during 1945. Guatemala approved the United Nations charter on Oct. 12 and the Bretton Woods monetary agreement on Dec. 28. Relations with El Salvador, which had been very strained during the tenure of the revolutionary junta in Guatemala and a harsh dictatorship in El Salvador, were improved after recognition by Guatemala of a new government in El Salvador in April. A Guatemalan railway embargo on transportation to El Salvador, imposed late in 1944, was lifted early the following year and during the summer of 1945 the presidents of the two countries met on the common border to discuss steps looking to the union of the two republics as a forerunner to Central American union. Guatemala signed an agreement with the United States on May 22 providing for a military mission to be sent to Guatemala; several technical advisers were sent from Washington in August to aid in solution of problems of price control, finance, and reform of statistical methods. The United States revealed in October that Guatemala had received, under the terms of a lend-lease agreement of Nov. 16, 1942, goods valued at \$21,089,000, an amount exceeded among the American republics only by Brazil. The Guatemalan government on Dec. 14 gave a printing plant, formerly owned by the German legation at Guatemala City, to the University of San Carlos.

Pres. Arévalo was seriously injured in an automobile accident on Dec. 16, 1945, but was able to resume his duties

after a few weeks. Policy differences between him and Finance Minister Jorge Toriello led to removal of the latter on Jan. 11, 1946. A congressional investigation of the nationalized Aviateca air line later in 1946 revealed Enrique Toriello, brother of the ousted finance minister, to be the chief stockholder as well as president, and showed that most of the rest of the stock in the profitable airline was held by Maj. Arana, former membér of the revolutionary junta. A contest for control appeared to be shaping up, complicated by the distribution by Toriello and Arana of a portion of their stock among a number of army officers in order to win their support. The Salvadorian supreme court on Jan. 27 refused a Guatemalan request for the extradition of José González Campos, finance minister

under Ubico. Dr. José Gustavo Guerrero, Salvadorian statesman and president of the Permanent Court of International Justice, was host to Pres. Arévalo and the other four Central American presidents at a unique meeting at his home in Santa Ana, El Salvador, on Sept. 12, 1946, in which agreement was reached for the establishment of a commission to study methods of bringing about a union of the five Central American republics; previous discussions had taken place largely between Guatemalan and Salvadorian officials only.

The Guatemalan government on Dec. 11, 1945 established the Bank of Guatemala to serve as a partial fiscal agent for the government. On Feb. 18, 1946, the office of price control, created July 1, 1945 to attempt to combat inflation, was abolished. The congress, late in July 1946, passed a law requiring that 85% of the pay rolls of Guatemalan firms must go to nationals; this modified a decree of Feb. 25, 1945 which had set the figure at 75%.

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(R. H. FN)

Guayule

See RUBBER.

Guderian, Heinz

Guderian (1886—), German army officer, was schooled in a military academy and entered the army in 1906. During World War I he rose to the rank of captain. He was attached to the ministry of war in 1919, and became a major in 1927, and a lieutenant colonel in 1931. In 1933 Guderian assumed command of the Black Drivers' unit, Germany's first regular tank corps, and in 1935 he was given command of all German tank troops.

	Guatemala Statistical Data	1940	
ltem .	Value Amount or (000's omitted) number 1 Quetzal = \$1.	Value Amount or number 1 Quetzal = \$1.00	
Exchange rate	i Querzai — 51.	50 , 200.22. 4	
Finance	\$12,497 (£2,556)	\$12,150 (£3,172)	
Government revenues	\$11,072 (£2,265)	\$10,950 (£2,859)	
Gold reserves	\$7,270 (£1,487)	\$10,085 (£2,633)	
National debt	\$18,686 (£3,822)	\$10,327 (£2,696)	
Transportation	• • • • •	***	
Railroads	681 mi.	880 mi.*	
Highways	4,310 mi.	•••	
Communication		3,800†	
Telephones	2,239	3,8001	
Telegraph lines	3,177 mi. 11,531	22,000†	
Radio sets	11,551	22,5001	
Minerals	5,466 oz.		
Gold	11.536 tons		
Salt	,		
Corn	342,866 tons	1,104,505 tons	
Coffee	135,473 tons	125,662 tons	
Livestock			
Cattle	532,25 <i>7</i>	612,000†	
Sheep	240,939	383,000†	
Swine	162,743	276,000†	
Forest products	A	1,350 tons	
Chicle	856 tons (exports on	\$12,039 (£3,143) • • • •	
Exports—total	\$16,336 (£3,341) \$10,016 (£2,049) 54,000 tons		
Coffee (clean)	\$10,016 (£2,049) 54,000 tons \$4,748 (£971) 9,502,000 bund		
Bananas	\$514 (£105) 858 tons		
Chicle	\$16,761 (£3,428)	\$12,667 (£3,307)	
Imports—total	\$1,469 (£300) 1,676 tons	\$1,499 (£391)	
Railway material	\$956 (£196)	\$705‡ (£184)	
Motor vehicles	\$498 (£102) 1,021 tons		
Wheat flour	\$489 (£100) 10,642 tons	\$368 (£96)	
Defense		£ 000	
Standing army personnel	6,000	5,000 10,600	
Reserves	•••	58	
Standing air force personnel	\$1,800 (£368)	\$1,900 (£496)	
Military expenditures	\$1,000 (2000)	4.% /	
Education Schools	2,500		
Students	145,000		
*1945. †1941. ‡From U.S. and Germany.	From U.S.		
1740. 11741. 4110m 0.0. and Cermany.			

He was promoted to the rank of major general the following year. His textbook, Look Out, Tanks, summarizing the basic principles of tank warfare, was published in 1939. Guderian led German occupation troops into Austria in 1938 and gained fame with his drive into Poland in 1939. In July 1944, following an attempt on Hitler's life, he was appointed chief of the army general staff, replacing Col. Gen. Alfred Jodl. From Oct. 1944 to March 1945 he was commander in chief of the nazi armies in the east and unsuccessfully attempted to halt the Russian advance.

Guerrilla Warfare

Few could foresee the part that guerrilla warfare and guerrilla tactics applied to ordinary warfare were to play in World War II. Yet, in the event, irregular forces, and regular forces using the methods of irregulars, scored success after success in almost every theatre of war. The reason for this lay in the presence, to a greater or lesser degree in most theatres, of the conditions essential to the successful conduct of guerrilla warfare, namely, an enemy strategically on the offensive but tactically often forced by circumstances on to the defensive. The German conquests in Europe and the Japanese conquests in southeast Asia were in many cases too rapid and on too vast a scale to make possible the complete occupation and proper policing of the territories conquered. In some places, only the key points and lines of communication connecting them could be firmly held, and the intervening areas had to be left to the care of isolated patrols or garrisoned by local "quisling" troops of doubtful quality. Meanwhile, the enemy's fighting troops were once again rushed into the line to play their part in fresh fighting and fresh conquests.

Thus the first essentials of guerrilla warfare were present, namely, a potential field of operations and abundant targets in the shape of the enemy's numerous garrisons, installations and long-drawn-out lines of communication.

The remaining aids to resistance, namely, a friendly population, natural cover and, above all, sources of supply, internal or external, occurred in varying degrees in the various countries concerned, and, according to the opportunities offered, the operations varied in scale from isolated acts of sabotage in some countries to full-scale campaigns in others.

Perhaps, too, there was a deeper and more fundamental reason for the recurrence of the guerrilla motive in this war. Just as World War I was essentially a war of position, so World War II was essentially a war of movement—movement on land, in the air and on the sea. The essential characteristic of the guerrilla being his mobility, it was only natural that he should have taken his place as a weapon beside the mosquito plane, the motor torpedo boat, the light tank and the paratrooper.

In a sense the Germans themselves may be said to have given a lead to the other belligerents in methods of irregular warfare, which later were turned against them to good effect. The "fifth columns" of nazi or fascist sympathizers, armed or trained in gangster tactics, who in so many countries emerged at the critical moment and took the loyal defenders in the rear, were, in the first place, a German invention. Parachute troops, too, which were first employed operationally by the Germans, had much of the guerrilla about them. Like guerrillas, they relied on a high degree of dash and initiative, on surprise and on their extreme mobility; for supplies they depended on what they could carry with them and on what they could seize from the enemy. If they were to live at all, they had to live on the enemy and on the country in which they were operating.

But all irregular warfare is not guerrilla warfare. The

Russian guerrillas, tracked down in a wheat field by German troops in the summer of 1941, and promptly executed. The disabled tank at the right is Russian true guerrilla is not a regular soldier, fighting far from his home, but a native of the country in which he is fighting, who has spontaneously taken up arms against the foreign invader or oppressor. The word "guerrilla," which literally means "little war," is Spanish in origin, and there could be no better example of guerrilla warfare than that which was waged so mercilessly and so successfully by the people of Spain against the troops of Napoleon, an example which was to be followed by their descendants more than a century later when they took to the hills in a despairing attempt to rid their country of General Francisco Franco and of his German and Italian allies.

African Operations.-In the different countries overrun by Germany, Italy and Japan circumstances favoured guerrilla warfare to a varying extent. As it happened, the first country to be overrun by the fascist dictators, Ethiopia, was the first to be liberated, and, in the liberation, Ethiopian guerrillas, glad of an opportunity to revenge themselves on their Italian oppressors, played a not inconsiderable part. In Libya, too, the Italians paid dearly for the atrocities which they had committed against the native population. The Arabs did not, it is true, take any very active part in the actual hostilities against the Italians. All organized resistance to Italian rule in Libva had long since been brutally crushed. But their hatred of the Italians was such that, despite savage reprisals, they were still ready to do everything in their power to help British forces operating behind the Italian lines.

Here it was that the author had his first experience of guerrilla warfare in 1942, during the operations of the Special Air Service regiment and Long-Range Desert group in Cyrenaica. The opportunities for such operations were immense. In the first place the British had the desert.



This provided an ideal background, a medium as essential to this kind of operations as the sea to naval operations, or the air to the operations of the royal air force. The Special Air Service regiment, as its name indicated, was originally formed and trained as a parachute unit, and indeed, at a later stage in the war, carried out many successful parachute operations. But it very soon became clear that in desert warfare there was no need for parachutes in order to reach a target behind the enemy lines. At that time the axis front line was in the neighbourhood of Sollum, on the frontier of Egypt and Libya, whence it was to advance during the months that followed as far as El Alamein. But throughout the Libyan campaign, the fighting necessarily followed the line of sea and land communications up and down the length of the coastal belt, and, properly speaking, the axis lines did not extend very far to the south, where they relied on natural obstacles such as the sand and the Qattara depression to protect their right flank. In order, therefore, to reach a destination behind the axis lines, all that was necessary for a small mobile raiding party was to penetrate sufficiently far south and then to make its way westward, unhindered and unobserved, to its destination. What is more, the whole journey could be made by motor vehicle, which, as a means of transport, possessed numerous obvious advantages over the parachute, and, notably, made the return journey less of an uncertainty. Thus, the desert furnished the lines of approach and withdrawal. It also gave cover, cover so good as to provide a temporary base.

Five hundred miles behind the axis lines, on the southern fringe of the coastal belt and dominating the town of Bengasi, with its harbour and system of operational aerodromes, lay the Gebel Akdar, a range of hills, partly pasture and partly desert. The broken and scrubcovered surface of the hills provided excellent cover for small forces. Moreover, the Gebel was inhabited by a branch of the fanatically anti-Italian tribe of the Senussi, who were willing to provide the British with guides, local intelligence and occasional food. For other supplies the British relied in the main on what they carried with them and on prearranged dumps. Apart from the Gebel, almost any stretch of the desert (which is geographically much more varied than is generally realized) provided some cover which could be supplemented by the skilful use of camouflage, a most necessary art under such conditions.

Such was the scene of operations. There was no lack of suitable objectives. All the way from Bengasi to the Egyptian frontier, the whole length of the axis's extended and inadequately guarded lines of communication, airfields, gasoline and ammunition dumps, motor transport parks and installations of all kinds offered the most tempting targets to suitably equipped raiding parties, operating either on foot or in specially armoured jeeps. The raiders made their attacks at night, either blowing up their targets with charges of high explosive or shooting them up with automatic weapons and then withdrawing under cover of darkness to hiding places in the neighbouring desert, whence they could make further sorties against fresh targets. These tactics, developed by Colonel David Stirling and Colonel Paddy Mayne of the S.A.S. regiment, and supported by the superb navigation and unrivalled knowledge of the western desert furnished by the Long-Range Desert group, produced remarkable results (including the destruction on the ground of several hundred axis aircraft), which were out of all proportion to the manpower and resources expended. Moreover,

these raids served to divert from the front considerable numbers of aircraft and armoured vehicles as well as infantry, which would otherwise have been employed in the main battle. Whether or not these units could properly be described as guerrilla formations, their operations, relying as they did for success on surprise and mobility, on striking power and the intelligent use of background, provided a perfect illustration of guerrilla principles applied to desert warfare.

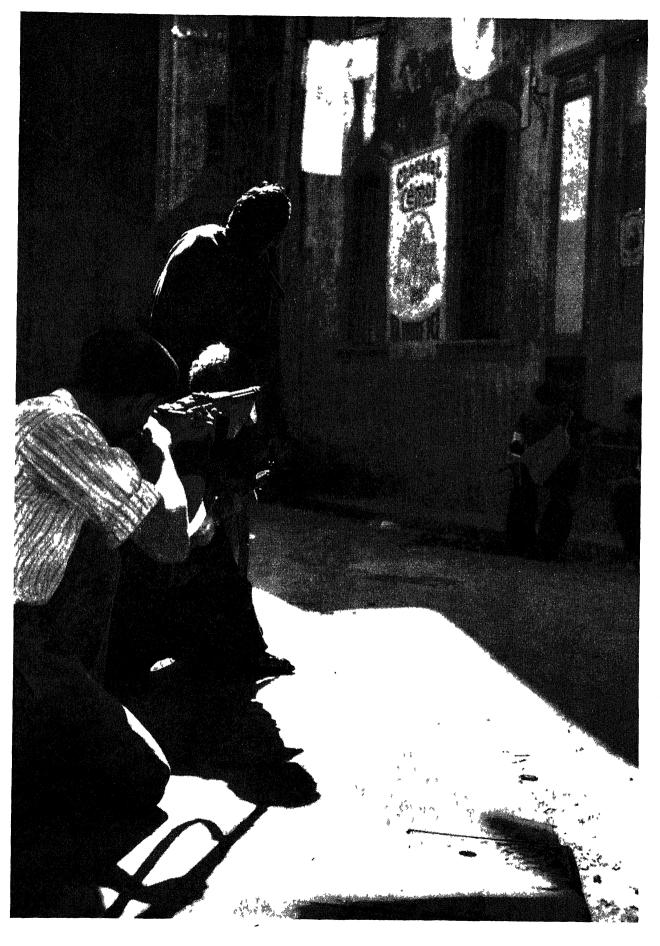
Asia.—After the desert campaign had been brought to a victorious conclusion, other British troops were employed in a not dissimilar role, though in greater strength, in southeast Asia. In April 1943 General Orde Wingate, who had already gained a reputation as a leader of irregulars in Ethiopia, led his first Burma expedition across the River Chindwin, on a journey of 1,000 mi. behind the Japanese lines. The Burmese jungle provided better cover than the desert, and, like it, was either uninhabited or else inhabited by a reasonably friendly native population. Meanwhile farther north, across the frontier, the Chinese were continuing the guerrilla activities which for more than ten years had constituted such an important part of their struggle against the Japanese. Once again, this was not a war of pitched battles, but a prolonged series of skirmishes and incidents of which the cumulative effect told in the long run.

In other theatres of war, and even where, properly speaking, no theatre of war existed, there were other guerrillas. Nor, during the decade under review, was it only in wartime that guerrillas made their mark. In Palestine, the Arabs before the war, and after the war the Jews, conducted well-planned and skilfully executed irregular operations against the British forces of occupation, while on the North-West Frontier of India the tribes carried on their centuries-old skirmishing against the British Raj. In each case the results showed how vulnerable modern armoured forces could be to guerrillas making intelligent use of tactics, enjoying the support at any rate of some sections of the population and operating in country suited to such operations.

Yugoslav Partisans.—But it was in a part of the world which had long been by tradition a scene of guerrilla warfare that guerrillas achieved during World War II one of the outstanding feats of arms in modern times. The peasant-warriors of Yugoslavia in common with other Balkan races had as their history a splendid record of resistance to the Turks and Austrians. This record they crowned by their resistance to the German and Italian forces of occupation during World War II.

When the Germans, with the Italians at their heels, invaded and occupied Yugoslavia in the spring of 1941, they made short work of the royal Yugoslav army, which, besides being hopelessly outnumbered, was badly equipped, badly led and, there was every reason to suppose, riddled with treason and corruption. But it was not until they had occupied Yugoslavia, divided it up into puppet states and installed "quisling" governments, that the troubles of the Germans and Italians really began.

When in 1943 the author was dropped by parachute into Yugoslavia as commander of the British military mission to the partisan forces operating there, those forces were already well established and had many notable successes against the Germans and Italians to their credit. They were also engaged in hostilities with the Chetniks of General Draja Mikhailovitch, who, after starting as a resist-



ance leader in 1941, had, partly from fear of axis reprisals and partly from hatred of the communist partisans, drifted into an equivocal position. The Yugoslav partisans, or army of national liberation, as they were later called, furnished an exceptional example of the results which could be achieved by guerrilla warfare at its best. They first entered the field in the summer of 1941. At first they consisted of small scattered groups of determined men and women under communist leadership, who had taken to the woods and mountains, practically without arms and supplies. Led by Josip Broz, known as Tito, a Croat metal worker and a leading communist, the movement developed rapidly. For arms and supplies the partisans relied on what they captured from the axis or were given by the local population. By daring attacks on German and Italian convoys or outposts, they provided themselves with material of war, which enabled them steadily to increase the scale of their operations. Their numbers increased with their successes. As their victories became known, their ranks were joined by Yugoslavs from all over the country, of all ages and from every walk of life. Of widely differing views and beliefs, they were united, as Yugoslavs had never before united, by the belief that the partisan movement under Tito's leadership offered the best chance of striking a blow for the liberation of their country, and all were filled with unquenchable enthusiasm for the fierce struggle in which they were engaged and for the new and better Yugoslavia which they saw as their ultimate aim and reward.

By the end of 1943 their total numbers were estimated as being in the neighbourhood of 150,000. This force, divided up into formations of varying strength, was distributed over the whole of Yugoslavia, being based for the most part in the wooded and mountainous areas in which that country abounds. Each partisan formation had its own headquarters, and these subordinate head-quarters were directly or indirectly responsible to Tito's general headquarters, which thus exercised effective administration and operational control over the entire force. Communications, where possible, were by wireless, use being made of captured axis sets, or, where these were lacking, by couriers, travelling precariously from one unit or formation to another through the intervening axis lines.

The war thus waged by the partisans was a strange one. There was no fixed front. Fighting, as they were, with small arms only and limited stocks of ammunition against a well-armed, well-equipped, well-supplied and motorized enemy, supported by plenty of armour, artillery and aircraft, it was necessary for the partisans to avoid pitched battles in which they would inevitably have been overwhelmed. If they were to succeed, it was essential that they should so far as possible retain the initiative themselves, and not allow it to pass into the hands of their opponents. Their aim was to attack the enemy where he presented the richest target, where he was weakest and, above all, where he least expected it. It was equally important, that, having attained their purpose, they should not linger but should fade once again into the background of hills and woods, where pursuit could not reach them. This necessitated a high degree of mobility. Their human resources, like their material resources, were precious. Any engagement in which enemy losses did not outnumber their own losses by at least five to one, the partisans reckoned a defeat. At all costs they had to deny the enemy a target at which he could strike back. As their numbers and the scale of their activities increased, this became harder. They had to resist the temptation to follow up and consolidate their successes. All gains had to be regarded as temporary. Villages and small towns captured by sudden attacks had to be abandoned again when the axis counterattacked in force. For the partisans to allow themselves to be forced into the role of a beleaguered garrison would have been a fatal mistake, as individual commanders were to learn on occasion by bitter experience. So "inhabited places," to borrow the phrase of the soviet war communiqués, changed hands time after time with their inhabitants, and each time became more battered and lost more inhabitants in the process.

The part played by the civil population, insofar as any distinction could be drawn between combatants and noncombatants, had a most important bearing on the struggle as a whole. The partisans relied on them to a very great extent for supplies, for shelter and for information. In all guerrilla warfare the attitude of the civilian population is of vital importance to the guerrillas. Throughout the country the partisans had organized a shadow administration, which, in the areas which they temporarily held, came to the surface and took charge of civil affairs, but which also led a precarious underground existence in the towns and villages garrisoned by the axis. Once, the author was guided through the axis lines at night by the head of the partisan underground organization in a neighbouring German-occupied village, who, after the Germans had been driven out, was to take over as mayor.

The population suffered atrociously for the support which they gave the partisans. In addition to famine and want, by which the ravaged country was swept, the Germans, the Italians, the Bulgarians and the various local quislings inflicted savage reprisals on the people of the country in revenge for the damage done by the partisans. Thousands of hostages, men, women and children, were massacred, and thousands of villages were pillaged and burned to the ground. Unlike the Chetniks of General Mikhailovitch, whose inactivity and reputed tendency to make terms with the Germans could largely be attributed to their anxiety to avoid such reprisals, neither the partisans nor their civilian supporters allowed anything to deter them from resistance to the axis. They reckoned that, in a total war of this kind where no quarter was given and none expected, everyone was in the firing line and all good patriots had to take their chance along with the combatants. And, in fact, the invaders, by their barbarity, defeated their own object, for such were the hatred and bitterness that it engendered, that the violence and intensity of the national resistance were redoubled.

Thus, long before the Allies, the Germans and Italians came to realize that the partisans constituted a military factor of first-rate importance against which a modern army was in many respects powerless. In the course of three years the axis launched against the partisans no fewer than seven full-scale offensives, each employing upwards of ten divisions with supporting arms. Once or twice larger forces of partisans came near to being surrounded and wiped out. Axis aircraft, against which they had no protection whatever, played an important part in discovering their positions and pinning them down, while suitable land forces were brought up to deal with them. But each time they succeeded in extricating themselves and reappearing elsewhere to attack the axis where least expected. Furthermore, during each of their offensives, the extensive troop movements involved exposed the invaders more than ever to the attacks and ambushes of the partisans. Thus these offensives failed in their

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Guerrillas in the Italian underground movement provided effective resistance to nazis and neo-fascists during World War II. These partisans were active in the struggle to free Milan and in the capture of Mussolini

object, and the partisans, though tired, hungry and poorly equipped, continued their resistance undismayed.

The author's instructions, when he entered Yugoslavia, were to afford all possible assistance to the partisans who, by their operations, were containing a force of some 15 German divisions which could otherwise have been employed against the Allied armies on another front. His task presented many unusual problems. Despite the strength of the partisan forces, the Germans, though incessantly harassed by the partisans operating from their bases in the forests and mountains, continued in effective occupation of Yugoslavia. They garrisoned the principal towns and held, sometimes with considerable difficulty, the main lines of communication linking them. In these circumstances, all supplies to Marshal Tito's forces had to come by air and, what is more, had to be dropped by parachute. The author arranged for British officers under his command to be dropped to all the principal partisan formations. These were linked by wireless both to British headquarters and to the base in Italy. Their principal task was to organize the dropping of supplies to the partisan formations to which they were attached according to a central plan agreed by Tito and the author. It was not an easy task. Lack of aircraft, lack of suitable air-fields in Italy, bad weather and, last but not least, lack of parachutes were all limiting factors. Moreover, the partisans were constantly on the move, and the greatest precision and punctuality were necessary on the part of the pilots concerned if the supplies were to reach the right destination. A few hours' delay or an error of a few thousand yards might mean that the supplies intended for the partisans would be received with open arms by the Germans. The supply work done by R.A.F. and U.S.A.A.F. pilots in this connection was beyond praise. Flying conditions over the Dalmatian mountains in winter were appalling, yet night after night the pilots found their way through snow and cloud to the bonfires lighted on remote hillsides.

Later, Allied aircraft were able to use landing strips, improvised under the very nose of the axis, and, in addition to landing supplies, evacuated many thousands of partisan sick and wounded who, had they fallen into German hands, would have been relentlessly massacred. This restored their mobility to the partisan forces concerned and helped them to extricate themselves from many a dangerous situation. In this matter of the wounded, inevitably a bitter problem in guerrilla warfare, excellent

work was done by medical officers belonging to the British mission who in different parts of the country improvised hospitals, distributed medical supplies, and performed operations in the woods, in barns or in cow-houses. Often too, the partisans, themselves masters of irregular warfare, were glad of the experience of British officers gained in the western desert and on other fronts in handling new and unfamiliar weapons.

An extremely important Allied contribution to the Yugoslav war of national liberation was tactical and strategical air support. When the author's mission first arrived in Yugoslavia, before the establishment of suitably placed Allied air bases in Italy, it was a certainty that any aircraft signalled by the look-out was a hostile one, and the partisans, lacking all means of defense, were at the mercy of the German air force. Soon the tables were turned. The specially formed Balkan air force and U.S. 15th air force drove the Germans from the sky, and the British were able to call upon a considerable force of Allied fighters and bombers to support partisan operations. One of the principal tasks of the author's mission was the co-ordination of Allied air operations with partisan land operations, and on innumerable occasions impressive forces of Allied fighters or bombers came to the help of a hard-pressed band of partisans, or opened the way for a vigorous partisan attack, in response to a signal flashed by radio only a few hours before.

A good illustration of the potentialities of co-operation between guerrillas and a modern air force was provided during the final phase of the war in Yugoslavia. In the spring of 1944 the Germans launched their seventh fullscale offensive against the partisans, culminating in a parachute and glider attack on Tito's headquarters. But, like the six other offensives which had preceded it, this final effort petered out, without achieving its object. As they had done so often before, the partisans, on being attacked, retired into the mountain fastnesses, denying the axis any fixed target at which to strike and at the same time counterattacking where the axis least expected it and was weakest. On this occasion, too, the partisans had the benefit of lavish Allied air support, a most important asset. The failure of the seventh offensive was the beginning of the end as far as the Germans were concerned.

By now the effects of the Normandy landings and of the soviet victories in the east were beginning to make themselves felt in the Balkans, and there were at last indications that the Germans had decided to withdraw the forces of occupation from Greece and Yugoslavia.

The resulting military situation clearly offered unrivalled opportunities for both guerrilla operations and for Allied air attack against an enemy whose morale was already low and who was withdrawing over far-flung lines of communication through hostile and largely devastated country; and the ensuing period was one of close operational liaison between the partisans and the Allies. After a visit to the supreme Allied commander in chief and a series of conferences between Tito, his commanders and the author, a plan was drawn up for a series of carefully concerted and sustained attacks by partisan land forces and Allied aircraft on axis road and rail communications throughout Yugoslavia, to be made during the first week of Sept. 1944, which was given the appropriate code name of "Ratweek." During this period, more than 2,000 sorties were flown by Allied aircraft against German communications while the partisans did sterling work on the

ground. Bridges were blown up, locomotives destroyed and convoys strafed from the air or ambushed by the partisans, while British naval forces and partisan armed schooners swept the Dalmatian coast. As a result of these joint operations the Germans' communications were thrown into a state of utter confusion just as their withdrawal from the Balkans was beginning. The advantage thus gained was exploited to the full in the ensuing partisan offensive which culminated in the battle for Belgrade, in which the partisans were joined by soviet forces under Marshal Fedor Tolbukhin, who had crossed the Danube into Yugoslavia a short time before. With the fall of Belgrade, the final liberation of Yugoslavia was already in sight.

The Yugoslav partisans had their counterpart in occupied countries all over Europe, but nowhere did such a combination of geographical and strategical advantages, effective Allied support, natural warlike qualities and brilliant leadership make possible resistance on the same scale. In the other Balkan countries resistance was sapped by lack of unity and determination. In France and Italy it became a military factor of first-class importance only once the Allies had landed. In most other European countries it was limited by circumstances to isolated acts of sabotage or terrorist activities, although in the soviet union large bands of partisans operated behind the German lines, and, in Poland, the battle of Warsaw, which ended so tragically, was one of the epics of irregular warfare.

(F. Mac.)

The Philippines.—The unheralded actions of guerrilla organizations in the Philippine Islands in maintaining the morale of the country, obtaining valuable intelligence, and combating the Japanese physically were of great value during World War II. Though occasionally some hint of these activities appeared in print, wartime security considerations for the most part would not permit release of information on this interesting phase of the world conflict.

Long before the war, officers of the U.S. army had expressed grave doubt as to the defensibility of the Philippines in event of attack. The long supply lines from the United States would, it was thought, present an almost insurmountable obstacle to a successful defense in the first stages of a war. They foresaw that guerrilla action could play an important part both in delaying the initial conquest by an invader and in rendering assistance when liberating forces could be organized.

The U.S. commander in the islands, Gen. Douglas MacArthur, had spent many years there and had plans thought out years before the war began. Guerrilla warfare came natural to the Filipinos who, for the most part, were determined to fight the Japs in all possible ways. Guerrilla action varied from one Moro swinging his bolo at a Jap neck to engagements involving hundreds of troops.

However, organization of the guerrillas was not left to chance. Before he left Bataan, Gen. MacArthur dispatched several small groups of officers—many of them intimately familiar with the islands—to disperse themselves, evade the Japs, and organize guerrilla bands. Each group, the largest of which contained no more than 15 men, included specialists in engineering, communications and other technical subjects. Though these units were organized and departed hurriedly, all knew their principal mission—to obtain and send back intelligence. The secondary mission was to hamper Japanese control of the country as much as possible, and to prepare to offer active assistance against the Japs when the reinvasion, even

then being planned, began.

The officers assigned to guerrilla duty escaped across Manila bay from Bataan a short time before its capture, and with others who had been cut off earlier in the campaign, wormed their way to the eastern and northeastern parts of Luzon. There they remained in groups for a while, but as the Japanese consolidated their conquest and established garrisons in the towns and villages, the Americans were forced to separate for added security. At first, pending perfection of local contacts, the greatest problem was to evade the Japs. But as comparatively few officers were available, they had to be spread thinly in any case, to extend the organization of guerrilla bands.

As outlying areas were subjugated, further contributions were made to the irregular forces. For the moment the Filipino soldiers simply put on civilian clothes, hid their weapons, and went home. When active bands began to be organized later, many of these caches were recovered. In some cases, fairly large scale operations had to be undertaken to regain such supplies. Most of the guerrillas eventually obtained U.S. calibre .30 Enfield rifles, though many used captured Japanese weapons.

After bands had been organized throughout the islands, intercommunication became one of the major problems. Small receiving sets from native homes were about the only radio equipment available. Replacement batteries and tubes were scarce. The guerrillas salvaged or stole storage batteries which they charged by use of ingeniously contrived generator units. The fuel for driving generators as well as for vehicles was obtained by distilling alcohol from tuba, the fermented juice of the palm tree. With these simple sets, about all that was picked up was an occasional bit of news from outside. Even this was of great value in keeping up spirits and providing a source of propaganda. Maintenance and repair of the radio equipment was a major feat of improvisation.

Messengers were relied upon for communication among units, though on some of the islands extensive telegraph lines were in operation. These were made from fence wire, straightened, spliced, and strung on broken pop bottles for insulators. Because of its central location and its being the largest source of Jap information, Manila logically became the message centre. Word brought in by representatives of various bands was passed around orally until eventually it seeped back to the other groups, often months later.

There were many false rumours. As most of the natives expected the liberation campaign to start at once, there were numerous spurts of anti-Japanese activities. Then, when no U.S. troops appeared, weapons were put away again and everyone went back to work. Suspicion of all strangers was a great factor in the difficulty of communications. It was perilous to be an outsider, and many were killed solely on suspicion. While this had its disadvantages in circulating information, it worked both ways to some extent; there were few instances in which the Japs knew of guerrilla plans or dispositions with any certainty.

The main effort during 1942 was directed toward perfecting organization, obtaining information on the Jap intentions and troops, and making plans for future actions. A few combat operations were undertaken, some to test guerrilla tactics and some for training, others based on false rumours of reinvasion.

Late in 1942 the first radio contact was established between the guerrillas and Gen. MacArthur's headquarters in Australia. MacArthur re-emphasized the prime importance of intelligence and completion of the communications network as a necessary adjunct thereto. Soon there-

after, limited supply by submarine began, first to Negros Island, then to Mindanao and other southern islands. With the availability of standard radio equipment communications improved greatly, and really co-ordinated action became possible for the first time without elaborate long-range planning. Not so important but still most useful were shipments of medicines, explosives, arms and ammunition and clothing.

Information began to flow southward as soon as the bands to the north knew that contact with MacArthur had been made. Requests for detailed information began to come in, and requests went out for certain vital supplies, with instructions as to how and where they might be delivered. Propaganda material was greatly desired. Such items as match booklets and chocolate bars bearing the inscription "I shall return—MacArthur" were very popular. Requests for them came from all over the islands.

By the spring of 1943 the number and effectiveness of the guerrillas had grown at such a pace that MacArthur felt it necessary to hold them back. He did not want the Japs provoked into organizing a major effort to break up the units.

Contact by submarine finally linked all the larger islands by April 1944, and after that date all the principal guerrilla elements were in regular radio communication with G.H.Q. Well before the reinvasion began, plans were made and actions co-ordinated, though to keep the Japs guessing, no definite date or places were mentioned until just before action began.

During the first phases of the landing operations, the guerrillas confined most of their efforts to obtaining intelligence and identifying "spot" targets for attack by U.S. planes. The combat troops were held in readiness till the final word came from MacArthur.

Luzon.—Scattered isolated elements of the U.S.A.F.F.E. (United States Army Forces in the Far East) in northern Luzon had formed bands and started guerrilla activities long before Bataan fell. By Jan. 1942, small groups each led by either an American or a Filipino were operating north of Pangasinan.

In Feb. 1942 Gen. MacArthur sent Lieut. Col. Thorpe, 26th cavalry, Philippine scouts, through the Japanese lines from Bataan to organize and co-ordinate native resistance. The small party arrived in the vicinity of Mount Pinatubo, back of the Jap lines, late in March. Early the next month another party set out from Bataan by boat to establish radio contact with Col. Thorpe and conduct intelligence operations. When Bataan fell, other officers joined up and plans were made for organizing the Luzon Guerrilla army forces. Luzon was divided into four guerrilla areas, as follows: northern Luzon, consisting of all provinces north of Nueva Ecija, Tayabas, and Pangasinan; west central Luzon, containing the province of Zambales; southern Luzon, which included the provinces south of Manila; and east central Luzon, which comprised all of Manila and its suburbs, plus the provinces of Pangasinan, Nueva Ecija, Tarlac, Pampanga, Bulucan and Bataan.

For recruiting, each province in the four main areas was organized as a military district with a commander appointed either by the area commander or by Col. Thorpe. The district commander organized his staff along the lines of divisional staff sections and selected regimental commanders who continued similar organization and appointment down to the selection of platoon leaders. The platoon leaders then continued the process down to the squad level. The privates were recruited by the squad leaders. Thus the squad members knew only

their leader, who knew only the platoon sergeant and lieutenant, and so on.

With the exception of those on active duty with intel-

With the exception of those on active duty with intelligence sections at the various levels, all guerrillas remained in their homes, keeping their normal occupations. For security every guerrilla took an assumed name. Unit commanders checked loyalty, determination and courage of the members by various means. Military offenders were tried and sentenced by district courts-martial patterned after those of the U.S. army.

On Luzon, between 50 and 100 U.S. officers took part in guerrilla activities. In 1944 a typical guerrilla group of 5,000 Filipinos contained only three Americans. One of the U.S. officers who escaped from Bataan, Col. Russell W. Volckmann, hacked his way through the jungle with a small party containing only one other American. He went into hiding north of the Olongapo road, then, after spending two months recuperating, made his way to northern Luzon and joined guerrilla forces there.

In June 1943 Col. Volckmann took command of about 8,000 guerrillas in that area. These forces had been harassing the Japs by ambushing trucks, destroying bridges and dumps, and raiding for arms and ammunition. Then, under orders from headquarters in Australia, they laid low and established an extensive intelligence network.

Four days before the Lingayen landing they renewed their efforts, destroying bridges, roads and communications, attacking airfields, supply dumps and convoys, and generally creating havoc in the Jap rear. Taking the offensive, they drove the Japs out of San Fernando and La Union, and continuing south, met the 33rd U.S. division driving north at Bawang. They soon grew to 20,000. Several operations and heavy fighting carried them in an eastward swing across two mountain ranges, bringing them to the Yamashita pocket, where they joined the 32nd and 6th divisions in that final operation.

The five regiments involved were recruited from Ilocanos, Igorots, Lowlanders and other Filipino tribes. They suffered 25% casualties, losing about 5,000 killed and wounded while killing an estimated 50,000 Japs and capturing 32,000. In accomplishing this, they destroyed the Japanese 79th independent brigade (Gen. Araki) and the 19th division (Gen. Osaki). The east central Luzon group had 28,000 men of whom 21,500 were attached for combat operations as follows: 6th army, 1st corps, 8,000; 1th corps, 5,000; 14th corps, 6,000, and signal base depot, 2,500.

Before the reinvasion of Luzon, the primary mission was intelligence. Combat units were organized secretly; the regiments were inactive initially. An officer training school was organized near Manila and was staffed by graduates of the Philippine Military academy. The curriculum included minor tactics and the techniques of infantry combat, intelligence, counterintelligence and sabotage. Supplies were obtained mainly by voluntary subscriptions, supplemented by raids on Jap stores and convoys for arms and ammunition.

The intelligence unit of E.C.L.G.A. (East Central Luzon Guerrilla Area), centrally controlled and organized, was typical. District, regimental and battalion intelligence officers operated in their respective territories. Information of operational importance was checked, collated and evaluated by the district G-2. Such information included enemy identifications, land, sea and air movements, data needed for strategic planning, and counterintelligence. From the intelligence net came vital data on order of

battle, installations, concentrations, airfields, depots, lines of communication, factories, movements and the like. Information reached the area G-2 within 24 hours, and the important items were transmitted to Gen. MacArthur's headquarters by radio. Such materials as sketches, enemy documents and reports were dispatched by courier who went by sailboat to Mindanao or Panay. There Col. Wendell W. Fertig and Lt. Col. Peralta, respectively, received the reports and forwarded them by submarine. After Oct. 1944 an advance detachment of MacArthur's headquarters, commanded by Lt. Comm. George Rowe, U.S.N.R., maintained contact with area G-2. This detachment had landed by submarine on Mindoro in July 1944. To it were sent intelligence materials that required physical transmission, also U.S. pilots recovered by the guerrillas after being shot down over the islands.

Headquarters, E.C.L.G.A., was established on Mt. Balagbag, where it commanded a view over Manila bay. Radio was installed, and movements of vessels in the bay were reported regularly. Numerous Jap attempts to capture the headquarters failed, but finally their efforts became too confining, and the station and records were moved to the Leprosorium in Novaliches. The lepers had gone from the institution, but the Japs avoided it.

One of the largest intelligence nets operated inside Manila. Members worked in airfields, communications centres, railway facilities, depots, factories and government offices. They made daily reports on their missions, prepared maps and sketches of defenses, studied enemy tactics and methods, and when opportunity was presented, liquidated Jap counterintelligence agents or sabotaged installations. Some agents worked with the Japanese military police, thus obtaining information invaluable in giving timely warnings of planned raids on guerrilla headquarters or in aiding the escape of prisoners.

After the first bombing of Manila, in Sept. 1944, the guerrillas on the spot contributed to accurate bombing and destruction of military objectives in that area. This they did by spotting air defenses, dispersion areas, billets and other installations of the Japanese.

Sabotage was directed and co-ordinated, though it was handicapped greatly by lack of suitable materials. Bridges were burned, telephone lines damaged, patrols ambushed and supply dumps raided. Anchored tankers and supply ships were set afire, and piers burned.

Action was taken against Filipinos who collaborated with the Japanese.

During the invasion of Luzon by U.S. forces, a plan was made to liberate prisoners held in a Jap concentration camp near Pangatian. Aided by Filipino guerrillas covering both flanks and establishing road blocks, the 6th Ranger infantry battalion conducted a successful raid and freed the prisoners.

Manila, May 20, 1945: American 43rd division troops and Filipino guerrillas drew tighter a mountain trap on thousands of Japanese in the Sierra Madre east of Manila Saturday after capturing Ipo dam, source of one-third of the city's water supply. The Nipponese force is believed to be the largest ever completely circled in the campaign to liberate the Philippines. Officers reported the trap was closed Thursday when the doughboys and Filipinos secured the vital dam intact.

The above brief communiqué concerned another joint operation of U.S. and Filipino guerrilla troops. The battle was essentially a division show. The terrain involved was the rugged, brush and bamboo-covered foothill area of the Sierra Madre range on Luzon. The objective was definite—the vital Ipo dam, held by the Japs.

The enemy was a well-organized force of about 4,500 with ample artillery support. They had retreated into the position early in the campaign, taking with them quantities of ammunition, food and medicines. Their time had been well spent in making elaborate defensive works consisting of caves, trenches and holes.

The attacking forces consisted of the 43rd division, plus the "Phil-American Yay Regiment" of guerrillas. While the division attacked from the southwest, the guerrillas were to swing around to the north under cover of darkness and come in from that direction. This manoeuvre was made on foot trails over the mountains, and was smooth and undiscovered. Communication with the guerrillas was solved by use of radio equipment serviced by air-dropping of batteries and other supplies. The only Americans with the Filipinos were forward observers from the division artillery. After the attack started, its progress was delayed three days by heavy rains, but the tempo increased with clearing weather, the final phase coming ten days after the jump-off. While the guerillas pushed through to the north end of the dam, the 103rd regimental combat team on the right seized the south end. The objective was taken intact, the final thrust having been so swift that there was not time to fire the demolition charges already placed. The Japs lost 2,757 counted dead and 108 prisoners, plus large quantities of matériel, while the attackers suffered 172 dead and 676 wounded.

Leyte.—Col. Morgan, an American formerly in the Philippine constabulary, was instrumental in organizing the guerrillas on the southern coast of Leyte. During the summer of 1942, the Japs had not bothered much with this island, most of their forces having rolled on south. Later in the year, after a few encouraging "incidents," guerrilla bands began to spring up all over Leyte. At first they had poor leadership, and some used the war as an excuse to raid villages for food, clothing and arms. Col. Morgan unified the guerrillas into military departments with co-ordinated control.

Col. Ruperto Kangleon, a Filipino army veteran with many years of service, had escaped to Leyte and finally headed the resistance forces there. His units made contact with Col. Fertig in Mindanao, and through him obtained radio equipment from Australia via submarine and sailboat. Ammunition supply was one of the major problems. Using fired cartridge cases, scrap metal and powder from Jap mines, the guerrillas made their own ammunition, crude but effective. They even improvised cannon. Gasoline, too, was very scarce, but alcohol proved a usable substitute.

Kangleon organized a local government of his own. Critical materials were requisitioned from the people with payment made on the basis of postwar funds. Paper money was printed as temporary currency. Jute sacking provided material with which the troops were uniformed after a fashion, and drills and exercises gave the men experience in military action.

As in the other islands, the guerrillas were too weak to risk major encounters but kept pecking away at the Jap when suitable opportunities were presented. The Japs occupied the coastal towns but never succeeded in driving the guerrillas out of their hills.

Prior to the U.S. invasion, the Leyte units performed very useful service in plotting Jap mine fields among the neighbouring islands. When the initial landing in the Philippines came at Leyte, the guerrillas had only a few days' notice. This was for security reasons, as everyone had been expecting an attack far to the south, probably aimed at Davao, in Mindanao. After the first surprise of the

Leyte landing, MacArthur kept up a constant flow of warning orders to guerrilla units, assigning missions to be accomplished in connection with certain operations.

Cebu.—The Cebu area command was headed by Col. James M. Cushing. He organized a tattered but well-trained guerrilla force, armed with a mixture of Jap and U.S. weapons, plus some homemade ones.

In Feb. 1945 the Cebu units engaged in a typical joint operation. A support party of the 13th air force was landed on a temporary flying strip to work with planes which had been assigned to assist in fighting the Japs. The guerrillas moved and guarded the radio equipment and personnel. Then, by direct observation from hill tops and by marking of guerrilla lines with panels, accurate air support was made possible. With this help, the guerrillas chased the Japs from the towns of northern Cebu. Later, units of the U.S. 8th army captured Cebu City, with guerrilla co-operation.

Mindanao.—Early in 1942 formal fighting between the Japs and Filipino troops on Mindanao ceased. The local troops, ill-armed, finally split into fragments of an army. On May 27, 1942, Brig. Gen. Guy O. Fort, commander on the island, capitulated on orders from Lieut. Gen. Jonathan Wainwright. Guerrilla activities did not cease, however, with his surrender. Soon there were thousands on the rosters. The guerrillas organized a civil government, collected taxes, held court, printed money, even ran a welfare and relief fund. In fact, they did about everything except reopen the schools.

News from outside was hard to get. The air was full of Japanese propaganda, and they printed it on leaflets and in the papers. Finally some U.S. reports began to come through, and with the first U.S. successes in the Solomons, everyone took heart.

At first, the Japs were rough on guerrillas. They burned whole villages in retaliation for one sniper's shot. Captured U.S. and Filipino guerrillas were brutally treated. Such tactics slowed the guerrillas, but eventually the drain on Japanese resources became too great and they tried to placate the natives instead of coercing them. The guerrillas were constantly being sought by the Japanese, but in the wooded hills they were not easily taken. Often, after initial rough experiences, the Japanese simply avoided certain areas.

Though initially the Japs had carried the fight to the irregulars, later their attacks grew rare; unless they had received large reinforcements they merely conducted routine patrols. Finally they actually agreed with the Moros that they would patrol only occasionally if the Moros would promise not to fire on them. In the next stage, the guerrillas began to attack Japanese camps and garrisons.

In 1943 there were several thousand organized troops on Mindanao under Col. Fertig, and communication had been established with similar groups on Panay, Misamis and Negros Islands. On the latter, radio equipment had been improvised and contact was made with MacArthur's headquarters in Australia. In March 1943, a U.S. submarine arrived with ammunition, medicines and other items requested by radio. This was the first of many such visits. MacArthur sent instructions not to push the Japs too hard so as to bring on a crushing counter blow, as he desired the guerrilla's main strength saved for the contemplated reinvasion. Meanwhile he wanted maximum intelligence.

One of the largest Japanese anti-guerrilla drives on Mindanao took place in June 1943. They used about 2,000 troops, carrying them on seven transports, with a light cruiser and 11 aeroplanes for escort. Their main obcoast, scattering the guerrilla bands, but the expedition was for the most part unsuccessful.

Though the combat efforts of the Philippine guerrillas were not inconsiderable, their most important over-all contribution to the cause of liberation was military intelligence. This helped MacArthur greatly, both in planning and carrying out the reinvasion and in earlier operations

jective was to capture the leaders of the Filipino forces.

They made surprise landings at many points along the

elsewhere. They identified Japanese troop units en route either to or from other theatres and passed on this information to MacArthur's headquarters in Australia.

By their unified resistance to the Japanese and their fine co-operation with United States forces in the liberation of their homeland, the citizens of the Philippine Islands justified every confidence that had been placed in them. Guerrilla action during the Jap occupation increased the pride of the inhabitants in their race and nation. Under great stresses they proved their coming of age and their worthiness of independence. (B. R. L.)

Conclusions.-What lessons of guerrilla warfare could be drawn from World War II? In the first place, the principles of guerrilla warfare which had held good since classical times were confirmed. Guerrillas still had to be mobile and elusive, in order that they might strike at the enemy where he was weakest and least expected it, and at the same time deny the enemy any target at which to strike back. Thus, however vast regular armies became and however elaborate their equipment, guerrillas still had to operate in small bands, and could not burden themselves with arms or equipment that would impede their mobility. In World War II, more than ever, a guerrilla could never risk a pitched battle; he had always to retain the initiative himself, and never allow himself to be forced on to the defensive, for, how should lightlyarmed foot soldiers stand up to tanks, artillery and aircraft? For this same reason the element of surprise and therefore the necessity for good intelligence were also more important than ever. If guerrillas were to get the best of armour, artillery and aircraft, it was essential that they should attack before they were themselves attacked., The intelligent Yugoslav child of 12, who accounted for a German Tiger tank and its crew by slipping a hand grenade unobtrusively into the open turret, would have fared less well in any other type of encounter with a tank.

On the other hand, the very fact of the vulnerability of modern weapons, equipment and military installations to sabotage and surprise attacks multiplied the targets open to guerrillas and increased the importance of their role in modern warfare. More than ever was the choice of targets important. Well-timed attacks by guerrillas or other irregular forces on well-chosen targets could, by destroying vital links in the strategical chain or by diverting and containing essential forces, throw out a whole plan of campaign.

Economy of resources was of paramount importance. The guerrilla could not content himself with an eye for an eye and a tooth for a tooth. He had to aim at achieving a maximum of result with a minimum of expenditure of human and other material. His war was what Lawrence of Arabia termed a "war of detachment."

The geographical factor likewise was important; a suitable field of operations was an absolute necessity to guerrillas. Of such fields, the 1940s provided a variety of illustrations. The western desert, the Ethiopian highlands and scrub, the Burmese jungle, the Philippine hills, the

mountains and forests of the Balkans, the vast Russian expanses, the hills and valleys of Palestine all harboured irregulars of one kind or another. Even the tenements and back streets of great cities proved their value as a background for guerrilla operations. Furthermore, in World War II, the rapidly shifting front of a war of movement greatly increased the opportunities of infiltration, and even regular units and formations on occasion found themselves operating behind the enemy lines to the surprise of all concerned. Nor had the part always played in guerrilla warfare by the civilian population decreased in importance.

What new elements had been introduced into guerrilla warfare since Lawrence first equipped guerrillas with machine guns and modern high explosives? Both of these weapons had since been perfected and developed, and had now become the stock-in-trade of the latter-day guerrilla, but the two innovations which revolutionized modern guerrilla warfare, the aeroplane and radio, were still in their infancy in World War I, although Lawrence seems to have foreseen the uses to which they could be put. These uses were double edged. Both aircraft and wireless could be used in pursuit of guerrillas as well as in support of them, and it was a matter for discussion in which role they were more effective. Certainly aircraft could be used with deadly effect in seeking out and pinning down guerrillas in hiding places which would otherwise be inaccessible. In fact, in many respects they constituted the most effective weapon against them. Well-placed agents, too, equipped with radio transmitters, could be very effective.

But on the whole the guerrilla probably did not lose by the introduction of these modern conveniences. The small portable radio transmitting and receiving set provided him with the ideal means of communication with his comrades in the field and also with his main forces or allies and his base or sources of supply, from all of which he had hitherto been cut off save for occasional messages by courier or other equally precarious means of communication. The possibilities thus offered of concerting and co-ordinating the operations between irregular and regular forces were clearly immense. Finally, aircraft could be a great asset to irregulars of all kinds, both as a source of supplies and reinforcements and employed operationally in tactical or strategical support of guerrilla operations. There could be no better illustration of both these uses of aircraft than the air support given by the Allies to the Yugoslav partisans. (See also TACTICS OF WORLD WAR II; WORLD WAR II.)

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Guevara, Juan Gualberto

Cardinal Guevara (1882—), archbishop of Lima and primate of Peru, was born in Arequipa, Peru, on July 12, 1882. He was educated at the Colegio San Vicente de Paul, the Seminary of San Jeronimo and the University of San Agustin at Arequipa, and the Latin-American Pian college and the Gregorian university at Rome. He was ordained to tne priesthood in 1906 and later returned to Arequipa, where he was vice-rector of the seminary and

attended the university. In 1920 he returned to Rome to continue his studies.

Before being consecrated bishop of Trujillo in 1940, Archbishop Guevara served as apostolic administrator of Huaras. In 1943 the see of Trujillo was raised to metropolitan rank and its ordinary became an archbishop. Following the death of Archbishop Pascual Farfan in Sept. 1945, he was transferred to the primatial see of Lima. Archbishop Guevara was proclaimed cardinal by Pope Pius XII at consistory on Feb. 18, 1946.

Guggenheim Fellowships

See LITERARY PRIZES.

Guggenheim Memorial Foundation

See Societies and Associations.

Guiana, British

See British Guiana.

Guiana, Dutch

See SURINAM.

Guiana, French

See French Colonial Empire.

Guided Missiles

See JET Propulsion; Munitions of War; Rockets; Standards, National Bureau of.

Guinea

See Portuguese Colonial Empire; Spanish Colonial Empire.

Guinea, New

See New Guinea.

Gustavus V

King Gustavus of Sweden (1858-), was born at Drottningholm on June 16, 1858, the son of King Oscar II and Queen Sophia Wilhelmina; he ascended the throne in 1907.

As King Gustavus advanced in years and prestige, the Swedish people feted him with magnificent celebrations. On his 80th birthday in 1938, cities and villages throughout the land were decked with flags in a general testimonial of love and respect for him, and an assertion of the national unity which he had laboured to develop. On into 1946 and the ripe age of 88 he continued to play tennis regularly, though he had to forego his customary trips to the Riviera during the war years, and in 1946 a slight heart attack brought at least a temporary cessation from his favourite sport. "Mr. G." was the royal personification of Swedish vigour and common sense.

In the fall of 1939 it was King Gustavus who gathered in Stockholm the heads of the northern states, including the president of Finland, in a gesture of Scandinavian solidarity and neutrality—a gesture not, however, strong enough to prevent the soviet attack on Finland. In World War I he had been the leader in Scandinavian neutrality; in World War II his country was soon left as the one neutral in the north. The King was unquestionably one of the chief influences holding the Swedish ship of state rigorously to her course of neutrality. He knew how to maintain a policy that was firm enough to preserve self-respect and independence, and flexible enough in wartime exigencies to preserve peace. In the constitutional democracy which Sweden had become, it was difficult to see clearly what part the monarch played, but his knowledge and



King Gustavus on the beach at Saeroe, Sweden, in the summer of

his skill, and the universal respect in which he was held, gave him a particularly strong influence in the country's foreign policy.

In 1946 young Prince Carl Johan, grandson of the King, married a commoner and according to custom was deprived of his titles, and took the family name of Bernadotte. A nephew, Count Folke Bernadotte, who had earlier married a commoner, played a significant role in the last days of the nazi reich, acting as go-between with the Allied command. The family was versatile and large, and the succession to the crown was assured for many years to come. (F. D. S.)

Gymnastics

National American Athletic union honours from 1937 to 1946 were principally divided three ways in each of the various gymnastic classes. George Wheeler of Pittsburgh, Pa., Arthur Pitt and Frank Cumiskey, both of Union City, N.J., shared the men's championship. The women's all-around championship was dominated by the Philadelphia, Pa., trio of Pearl Perkins Nightingale, Helm McKee and Clara Schroth. The Swiss Gym society of

Union City dominated the men's team competition, followed by Penn State college and the University of Illinois.

In the men's all-around test, Wheeler held the championship from 1937 to 1941. Pitt, a member of the strong Swiss Gymnastic society, captured the all-around crown from 1942 to 1944, and his teammate, Cumiskey, took charge in 1945 and 1946. Cumiskey, a 33-year-old postal clerk, lost the 1944 championship to Pitt by two-tenths of a point. He defeated Pitt the following year by 46.1 points.

Mrs. Nightingale, as Pearl Perkins, won the first of her three championships in 1937, and repeated as Mrs. Nightingale in 1941 and 1943. Miss McKee brought Philadelphia the titles in 1938 and 1944, while Margaret Weissmann of the New York, N.Y., Turner Verein spoiled Philadelphia's ten-year dominance with her all-around victory in 1939. Miss Schroth, representing the Philadelphia Turners, won the women's championships in 1945 and 1946.

Union City, N.J., gymnasts won six of the ten men's championships from 1937 to 1946. Under the title of the Swiss Turner Verein, the Union City team won from 1937 to 1939, and repeated in 1942 and 1944–46 as the Swiss Gymnastic society. The University of Illinois broke the Union City team dominance in 1940 and tied the Bohemian Gymnastic Union Sokol of New York in 1941. Penn State college annexed the team title in 1943 and 1945.

	National A.A.U. Gymnastic Champions, 1937 to 1946												
Year	Men	Women	Men's Team										
1937	George Wheeler	Pearl Perkins	Swiss Turner Verein, N.J.										
1938	George Wheeler	Helm McKee	Swiss Turner Verein, N.J.										
1939	George Wheeler	Margaret Weissmann	Swiss Turner Verein, N.J.										
1940	George Wheeler	No contest	University of Illinois										
1941	George Wheeler	Pearl Nightingale	Univ of Illinois and Bohemian Sokol, N.Y.										
1942	Arthur Pitt	No contest	Swiss Gym society, Union City, N.J.										
1943	Arthur Pitt	Pearl Nightingale	Penn State college										
1944	Arthur Pitt	Helm McKee	Swiss Gym society										
1945	Frank Cumiskey	Clara Schroth	Penn State college										
1946	Frank Cumiskey	Clara Schroth	Swiss Gym society										

Gymnastics, because of its emphasis on physical fitness, attracted increased attention during World War II. Of interest was the large number of young people in the U.S. national championships, especially among women. Margaret Dutcher of Ridgewood, N.J., and Leonora Owens of Philadelphia won their second national titles as 16-year-olds in 1946. Miss Dutcher's championship was in clubs and Miss Owen's in tumbling. (M. P. W.)

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Gynaecology and Obstetrics

Sulfanilamide was first discussed in connection with diseases of women and obstetrics in the early 1940s; its derivatives sulfadiazene and sulfathiazole later displaced it because of the ill side-effects of the original and a certain degree of bactericidal selectivity in these derivatives. Subsequently, the effectiveness of penicillin for combating infections was noted. This new preparation was more potent in wider application, with definitely less incidental ill-effects on the patient than chemotherapy by sulfaderivatives. Sulfathiazole was demonstrated by army and navy medical officers, working under controlled conditions on large series of patients, as being quickly effective in almost all of the infections susceptible to sulfa-

therapy and especially so in both gonorrhoea and syphilis.

Penicillin was at first presumed to be without untoward reactions on the patient. In 1945 the innocuousness of its use during pregnancy was questioned by H. M. Leavitt, who found that either the penicillin or the mould from which it was developed might cause bleeding from both the nonpregnant and the pregnant uterus. This matter was still unsettled in 1946, and might result in curtailment of the use of penicillin during pregnancy.

Moreover, neither sulfa preparations nor penicillin are potent against certain organisms, notably gram-negative bacilli, such as typhoid and tubercle bacilli, and are relatively ineffective in infections in which colon bacilli predominate. Pyelitis, during pregnancy or otherwise, of colon bacillus origin, may be entirely unaffected by even intensive treatment with either or both of these preparations.

Streptomycin, given by intravenous or intramuscular injection, was shown by W. F. Elias and J. Durso to be excreted in high concentration in the urine. At high concentration, most resistant bacteria are quickly killed, so that streptomycin gave promise of becoming the treatment of choice for urinary infections.

The use of penicillin prophylactically in potentially infected obstetric and gynaecologic cases became widely accepted. It, alone or with sulfonamide preparations, was considered especially valuable in caesarean section on infected women.

The net result of these outstanding improvements in the treatment of puerperal infection together with general betterment of technique was a reduction in maternal mortality in the United States over a ten year period to a low rate of 2.3 deaths per 1,000 live deliveries. Their effect on infected gynaecologic and other surgical operative cases was a similar improvement in death rates.

Advances in the technique of blood transfusion and the general familiarity with the use of plasma were lessons learned from World War II. Blood and plasma banks became widely established, and commercial distribution of plasma also contributed generously to the availability of this life-saving medium. At the beginning of the decade 1937–46, a blood transfusion was often a "last resort" measure, and the use of plasma infusions was virtually unknown. Both were commonplace by the end of the decade.

Human serum albumen, made by fractionation from the most osmotically active portion of plasma (a military development) was another type of blood substitute. Its extremely rapid action in shock makes it a highly valuable obstetric weapon. In the production of serum albumen a by-product was found and named fibrin-foam. It is a sticky, spongy or foamy mass made by whipping liquid fibrinogen, and clotting it by adding thrombin. It is a haemostatic agent which found some use in both obstetrics and gynaecology.

Pregnancy.—Routine Wassermann reactions early in pregnancy advanced from the status of an advisable procedure to one legally required in many communities.

A recognition of the cause, prevention and treatment of erythroblastosis foetalis as being the result of certain incompatabilities between maternal and paternal bloods was initiated chiefly by C. T. Javert, L. F. Richdorf, W. S. Kearney, P. Levine and others in 1941 and 1942. Briefly, this condition may develop when the Rh factors of the mother's blood are minus and the father's positive with the infant inheriting the Rh + factor in predominance.

The transmission of Rh agglutinogen from foetal into maternal circulation, resulting in isoimmunization of the mother with formation of antibodies and their transmission through the placenta into the foetal circulation, are the responsible factors in the red cell haemolysis and other foetal symptoms known as erythroblastosis.

The result of this knowledge was to place the routine testing of mothers' blood for Rh factor on the same basis as that formerly occupied by blood testing for signs of syphilis, namely, an elective procedure widely followed in the better clinics. It was to be hoped that it would soon be legally required.

Advances in the treatment of the condition, with greater prevention of infant deaths from erythroblastosis, resulted from the elucidation of its mystery. These studies also resulted in priceless information regarding certain hitherto inexplicable sudden deaths among parturient women requiring transfusions whose husbands or others with positive Rh blood factor had been used as donors for these isoimmunized women.

Roentgen-ray pelvimetry during pregnancy became highly developed and widely applied, particularly as an important diagnostic and prognostic measure in women with pelves of doubtful size. Many papers appeared on this subject in which H. Thoms was a pioneer.

Anaemias peculiar to pregnancy became more commonly discovered and treated earlier because of the growing tendency to perform routine blood counts as a necessary part of antenatal care.

Vitamin deficiencies during pregnancy were studied apace, with general medical observations on this subject. They were found to be more common to the pregnant than the nonpregnant state, and certain of them are highly important. Increase in Vitamin D intake is essential to pregnancy as an aid to calcium metabolism and bone growth; deficiencies in Vitamin B were accredited as an aetiologic responsibility in toxaemias of pregnancy. Comparatively little new was accomplished during the decade on the cause or treatment of abortions, habitual or otherwise, or in the cause and treatment of pregnancy toxaemias.

During 1945 the sensational fact was established that an attack of rubella (German measles) early in pregnancy will result in congenital deafness or congenital eye defects including blindness, or both, in the infant in more than 50% of all instances. Congenital cardiac disease is another complication of this disease. After the third month, the disease in the mother is much less likely to be followed by congenital defects in the infant. According to some authorities, several of whom promptly studied and confirmed the original findings, if rubella occurs during the first two months of pregnancy, 100% of the infants will have such serious congenital defects that therapeutic abortion is advised.

The diagnosis of placenta previa by roentgen-ray pictures using "soft tissue" technique to disclose the outline and location of the placenta was a notable advance over earlier dependence upon risky digital examinations.

Labour.—Caudal analgesia for relief of pain during labour and delivery attracted wide attention and reception. At first it was overendorsed; professional opinion, however, settled down to the concept of the originators, R. A. Hingson and W. B. Edwards, that the method must be used only by specially trained experts and only in selected cases. Caudal analgesia was utilized to advantage for additional special purposes, notably labour in preeclampsia or eclampsia, for relief of pain and swelling from the vasospasm of thrombophlebitis, and also for "cervical dystocia."

Sodium pentothal administered intravenously proved satisfactory both for operative (low forceps) and for spontaneous delivery. Procedures for which it is to be used must be short, because the infant is affected and anaesthetized after 10 to 20 minutes of its use.

The new synthetic, demerol, was recommended as a substitute for morphine for almost all obstetric purposes, but had not yet been fully accepted in this respect by the end of the decade. (See also Anaesthesiology.)

Induction of labour for justifiable reasons became an accepted procedure. The method of rupturing the membranes and initiating uterine contractions by minute, repeated doses of pituitary extract displaced the use of bags and bougies.

Episiotomy became an established procedure, and efforts to "avoid tears" were superseded by median or mesiolateral incision of the perineum during delivery. In conjunction with this immediate perineorrhaphy follows, the use of fine catgut (number o or oo plain or ooo chromicized sutures) being generally chosen. This was in line with the tendency to use finer instead of heavy suture materials in all types of surgical operations.

The Waters modification or revival of extraperitoneal caesarean section did much to eliminate the need for hysterectomy following caesarean section in neglected and infected cases. Such radicalism as the latter was no longer necessary, since the other afforded great protection.

Puerperium.—Infection ranked with haemorrhage as a leading cause of maternal deaths. Therapy by sulfonamides, penicillin, and streptomycin, all discoveries of the decade, served in reducing maternal mortality and morbidity. Penicillin was found effective in abating puerperal mastitis without abscess formation. Stilbestrol came into general use for relief of engorged breasts, often a precursor of actual mastitis.

Thrombophlebitis was successfully treated by intravenous injection of heparin, plus caudal "block" or injection of the spinal cord meninges with procaine hydrochloride, to produce the combined effect of lowered coagulability and relaxation of vasospasm, together with relief of pain and swelling.

Sterility.—Sterility or infertility continued to be in the foreground as a subject of research, attracting attention in North and South America and in England. Interest was actively aroused by the finding that many childless couples could be relieved. During the decade 1937–46, the study and relief of sterility became established on so routine a basis, and results became so good, that many gynaecologists took up this work with enthusiasm, the incidence of average correction and pregnancy ranging between 35 and 40%. This could be considered as one reason for the generally increased birth rate.

Office Gynaecology.—Office or ambulatory treatment of gynaecologic patients took on greater scope and importance. Sterility studies contributed because these were almost entirely office procedures. Various office treatments reduced hospital admissions and minor operations. The use of the thermocautery in cervicitis was an example; pelvic diathermy and thermal treatments for certain ailments including postoperative stages, the use of sulfonamides and penicillin in gonorrhea and syphilis, and the large field of endocrine disorders were other items in this progress.

Cancer.—Nothing outstandingly new was developed in either diagnosis or treatment of cancer (q.v.). Early diagnosis was still the important factor in effective treatment. The value of periodic pelvic examinations in respect to early diagnosis was convincingly demonstrated by Cather-

1938 and by Augusta Weber and her associates in Chicago, Ill., in 1943.

Endometriosis.—This disabling condition was said by V. S. Counseller to rank second in frequency among gyn-

ine MacFarlane and her associates in Philadelphia, Pa., in

V. S. Counseller to rank second in frequency among gynaecologic conditions encountered in the surgical pathology laboratory. At the beginning of the decade, it was still not common to diagnose this condition correctly in advance of operation.

Operative Technique.—Talcum powder used generally on gloves when being sterilized was found to interfere with wound healing, if gloves are not well rinsed off before use by the surgeon; irritating deposits of talcum crystals might be found persisting in wounds long after the operation.

The custom was established of sprinkling sulfathiazole crystals into infected operation wounds as a prophylactic expedient.

Smaller and smaller suture materials became favoured for closure of abdominal wounds, and some surgeons prefer nonabsorbable suture material such as silk, cotton, rayon or nylon.

The perennial debate regarding the relative advisability of total versus subtotal hysterectomy had not been settled. The proponents of total hysterectomy based their claim on the occasional occurrence of carcinoma in the stump of an amputated uterus. Its opponents pointed to the higher mortality rate from the more difficult total hysterectomy.

Urethrocele and stress incontinence continued to be troublesome conditions for which an old procedure, namely a fascial sling around the urethra at the neck of the bladder, was revived. This operation, utilizing a strip of abdominal fascia in either type as described, was always most effective and the reason for its not having been more generally employed was not clear. (See also DIABETES.)

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Gypsum

The extensive use of gypsum as a building material led to small outputs for local use in scores of countries, but there were only a half a dozen which contributed important tonnages. World output was of the order of 13,000,000 short tons prior to World War II. Figures were

lacking for France, Germany and a few other fairly large producers. The trend of output by other major producers is shown in Table I.

Table I.—Major World Production of Gypsum

						ſ,	nou	Sunus Or s	11011 10113)			
								1937	1939	1941	1943	1945
Australia								174	199	181	95	2
Canada								1,151 280	1,532 772	1,566 145	431 101	822
Egypt . Great Bri								1.225	1.149	1.319	1,532	2
Italy								459	477	362	. 5	8
United Sta	at e	s			٠		٠	3,058	3,227	4,789	3,878	3,812

The war years had a marked effect on the gypsum industry in the United States. A feverish construction of army camps, industrial plants and housing boosted gypsum production from 3,058,116 tons in 1937 to a high of 4,788,534 tons in 1941. After the heavy rush of war building was over, production declined to 3,761,234 tons in 1944. Then there was much talk of a postwar boom in residential and commercial building, to bridge the gap of the war years, but this activity failed to develop to any great extent in 1945 so far as the gypsum output was concerned. Largely because of labour shortage, 1945 showed little improvement over 1944, and most of the increased supplies obtained came from expanded imports from Canada. Conditions showed some improvement in 1946; during the first half of the year the output of gypsum board, largest item in building use, increased 38% over the same period of 1945.

Table II.—Data on the Gypsum Industry in the United States
[Thousands of short tons]

									٠,						-
											1937	1939	1941	1943	1945
Mine output											3,058	3,227	4,789	3,878	3,812
Imports											897	1,308	1,348	231	509
Supply											3,956	4,535	6,136	4,109	4,320
Sales											3,504	4,092	5,760	4,186	3,987
Crude .											861	868	1,321	1,234	1,148
Industrial											126	110	152	164	158
Building	•	•	•	٠	•	•	•	•	•	•	2,517	3,114	4,287	2,788	2,681

The United Kingdom, the second largest producer, had a declining output to 1940, but reconstruction of war damaged buildings led to subsequent increases to levels never before attained.

As in the United States, the Canadian output expanded to a high in 1941, and then declined sharply as demand for exports to the United States decreased. Exports began to increase again after 1943, bringing the Canadian output up to 822,380 tons in 1945, and to 499,150 tons in the first half of 1946. Australian production reached a peak of 206,548 tons in 1940, followed by a sharp decline to levels not experienced since the depression years of the early 1930s.

(G. A. Ro)

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Gyroplanes

See AVIATION, CIVIL.

Haakon VII

King Haakon of Norway (1872-), was born Prince Charles of Denmark, second son of Frederick VIII (and brother of Christian X), on Aug. 3, 1872. Upon the separation of Norway from Sweden, he was elected king by the Norwegian storting (Nov. 18, 1905), and took the old Norse name of Haakon, and that of Olav for his son, the crown prince. Haakon married Maud (1869-1938), youngest daughter of King Edward VII of England.

Haakon, at 74 in 1946; was the youngest of the three

Scandinavian kings, and he had been forced to lead the most strenuous life in the tragic years of war. In the crisis of 1940 he maintained a calm courage even while being hounded out of Oslo by the German invasion and driven northward through Norway. He remained with the government until, by June 7, 1940 (the 35th anniversary of Norway's complete independence), further resistance within Norway had become impossible. He and the rest of the government then took ship for England, and set up in London one of the most effective of all the exile governments. He firmly refused the request of four members of the "presidential board of the storting" that he abdicate. His position was clear and secure, for the Norwegian constitution made definite provision for the possibility that king and ministers might have to leave the country and carry on from abroad.

Unusually intimate contact was maintained between the exiled leaders in London and the people at home in Norway; sabotage and guerrilla resistance to the nazis was effectively organized. The government likewise managed a first-class merchant fleet on the high seas and trained airmen and others in Canada and in England for the great job of reconquest. Haakon was the quiet, dependable rallying point for Norwegians everywhere, at home and abroad, on land and sea. He fully lived the motto he had chosen in 1905: "All for Norway."

When the Norwegians had lived through the bitter years of war and occupation, they gave Haakon a rousing welcome home again. His personal prestige was strengthened by his steadfast demeanour, his never-yielding fight and his quiet inspiration during the desperate years. Home again in 1945, he worked harder than ever to reacquaint himself with the problems and the personalities of his land.

(F. D. S.)

Hackworth, Green Haywood

Hackworth (1883-), U.S. jurist, was born Jan. 23, 1883, in Prestonburg, Ky. Educated at Valparaiso, Georgetown and George Washington universities, he was admitted to the bar in 1912. He served as attorney for the state department from 1916 to 1918 and as assistant solicitor from 1918 to 1925; in the latter year he was appointed chief of the legal office of the state department. In 1930 he participated in the codification of international law at The Hague, and in 1937 he was chosen to succeed Elihu Root on the permanent court of arbitration. Hackworth visited Moscow in 1943 as a member of the U.S. delegation to the tripartite conference. The following year he attended the Dumbarton Oaks conference in the United States. In Feb. 1946, he was elected judge of the International Court of Justice. Hackworth wrote the eightvolume Digest of International Law (1940-44).

Haile Selassie

Emperor Haile Selassie of Ethiopia (1891—), was born July 17, 1891, the great-grandson of Haile Melikot, king of Shoa. Selassie, whose name was Ras (Prince) Tafari Makonnen before he was monarch, became heir and regent to the throne in 1916 after his cousin, Zauditu, was proclaimed empress in that year. Gradually extending his power, he had himself proclaimed king in 1928, but did not formally ascend the throne until Nov. 2, 1930. He took the name Haile Selassie, meaning "Power of the Holy Trinity," and assumed the titles "King of Kings of Ethiopia, Conquering Lion of the Tribe of Judah, the Elect of God and the Light of the World."

Selassie secured admission of Ethiopia into the League of Nations in 1923 and two years later protested to the

League against the Anglo-Italian agreement of 1925, regarding spheres of influence in Ethiopia, as a violation of his country's integrity.

With regard to domestic problems, he worked cease-lessly to modernize Ethiopia, although progress was slow because of the country's backwardness. In 1931 he granted the country a constitution which provided for a bicameral parliament and responsible ministers. As the people lacked the education to use their new powers, real authority rested in his hands.

When Mussolini's legions invaded the country in 1935 and routed the Ethiopian troops, Haile Selassie was compelled to flee. On May 1, 1936, the Italians occupied Addis Ababa, and proclaimed King Victor Emmanuel III as emperor of Ethiopia. After British forces had liberated the country from Italian rule during World War II, Haile Selassie returned to Addis Ababa on May 5, 1941. Great Britain recognized his nation as a sovereign state on Jan. 31, 1942, and provided the emperor with financial aid to reconstruct his country.

Hairdo

See Fashions, Women's.

Haiti

Haiti is a West Indian republic occupying the western third of the island of Hispaniola (also called Haiti or Santo Domingo). Various authorities have listed the area as 10,204, 10,695 and 10,748 sq.mi. Population estimates varied from 3,000,000 to 3,500,000; these widely quoted estimates had little or no basis in fact, as no census had ever been taken. The racial distribution was estimated to be 95% Negro and almost all of the remainder mulatto. An estimated 1,600 foreigners, approximately 575 of whom were North Americans, lived in the country in 1946. The population density of about 300 per sq.mi. was the greatest by far of any Latin American republic. The capital is Port-au-Prince (Pop. est., 125,000); other cities are Gonaïves (12,000), Les Cayes (15,000), Cap Haïtien (15,000), Jacmel (10,000), St. Marc (10,000) and Jeremie (8,000). The population is predominantly rural, only about onetenth living in urban communities. The official language is French, but a patois called creole, derived from Norman French of the 17th century, is widely spoken. Roman Catholicism is the official religion, though many persons in remote areas practice the folk religion of vodun or voodoo, with a large admixture of African elements. The traditional form of government is unitary, with a bicameral legislature composed of a senate and a chamber of deputies, a president elected by the two legislative houses meeting jointly as a national assembly and a judiciary headed by a court of cassation. Presidents during the decade 1937-46 included Stenio Vincent (to May 15, 1941); Elie Lescot (May 15, 1941-Jan. 11, 1946); military junta headed by Major Frank Lavaud in power after Jan. 11, 1946; Dumarsais Estime (after Aug. 16, 1946).

Border Massacre.—The density of population and the lack of development frequently led to emigration of Haitian peasant farmers for work on sugar plantations in the neighbouring countries of Cuba and the Dominican Republic. The Cuban government early in 1937 transported a considerable number of Haitian workers back to Port-au-Prince. A much more serious crisis arose with the Dominican Republic because of border clashes beginning in Oct. 1937 which quickly led to armed attacks on Haitians living on the Dominican side of the border. It was freely alleged that the attacks, which developed into the proportions of a massacre, were instigated, or at least condoned,

by Gen. Rafael Leónidas Trujillo, president of the Dominican Republic. The latter country, though with a much smaller population than Haiti, had been converted into a relatively powerful military state by Gen. Trujillo and clearly was militarily superior to Haiti, thus reversing the situation that had prevailed at various times in the 19th century, when Haiti either threatened or conquered the Dominican Republic. Official Haitian estimates placed the number of persons killed at 8,000, with a greater number wounded; unofficial, but normally reliable, estimates ran from 7,000 to 10,000 or more.

Haiti demanded an official investigation of the atrocities, which demand the Dominican government for a time resisted. The latter government, though it minimized the entire affair, undertook by an agreement of Oct. 15, 1937, to conduct an investigation in order to fix responsibility. After further incidents had been reported, the Haitian government on Nov. 12, appealed to the United States, Mexico and Cuba to use their good offices and to mediate. The Dominican government denied that any such need existed, and charged early in December that counterraids were being made from the Haitian side of the border. Haiti on Dec. 13 invoked the Gondra treaty, negotiated at the fifth Pan American conference at Santiago, Chile, in 1923, as well as later inter-American treaties, which provided for the appointment of commissions of inquiry. The question was ultimately submitted to arbitration under the Gondra treaty, and on Jan. 31, 1938, Haiti was awarded an indemnity of \$750,000, one-third to be paid in cash and the balance in annual payments of \$100,000. Ill feeling between the two countries continued for some time there-

Economic Uncertainty.-By contract with the Haitian government, the J. G. White Engineering corporation began in 1938 a broad program of public works, parts of which involved irrigation and drainage works, highway construction, etc. Economic uncertainty continued, however, although with more promise for the future than had been true previously. The agricultural program was marked by distribution of seedlings of coconut, lime banana, coffee and other plants, with the threefold objective of furthering diversification, extending the area under banana cultivation and improving the quality of coffee, the country's leading export crop. Exports increased in volume in the fiscal year ending Sept. 30, 1939, but had proportionately less increase in value. The outbreak of war in Europe had serious effects on Haitian trade, especially in so far as banana exports were concerned. The constitution, adopted in 1935, underwent several minor amendments in 1939.

Haiti's economic uncertainty crystallized during 1940 into an acute economic depression as the country began to feel the full effects of World War II. Coffee, the chief money crop and the main reliance of the small Haitian landholder, was especially hard hit, as the value of coffee shipments, normally half of the export total, declined by 45%. The government levied an additional export duty on coffee in an effort to bolster its shrinking revenues, but the chief effects were to impair materially the saleability of the commodity. A third of the crop was still unsold at the end of September. The inter-American coffee quota agreement in Nov. 1940 allotted 275,000 bags of 60 kilos each as Haiti's quota for export to the United States. This gave promise of some economic relief but did not provide for the full crop, estimated to be 400,000 bags for the 1940-41 season, especially as more than a third of the 1939-40 crop

had been sold in European markets now closed by the war. In practice, however, the basic coffee export quota assigned Haiti was regularly exceeded in shipments to the United States, sometimes by large amounts. Cotton might have served as a partial relief crop for Haitian farmers, except that following 1935 production had declined steadily because of the spread of the boll weevil, with quarantine and sanitary measures reported to have little effect on its control. The government continued its efforts to encourage sisal production.

The financial crisis in which the Haitian government found itself was alleviated in part by the United States agreement to dêfer a third of the interest payments due on Haitian bonds on April 1, 1941. A sharp subsequent rise in foreign trade so increased national revenues by September, however, that the deferred payments were liquidated entirely. The United States Export-Import bank made a loan of \$5,000,000 on May 1, 1941 to further the program of agricultural diversification, especially with regard to rubber production, spices and a variety of tropical medicines and fibrous plants.

The Société Haitiano-Américaine de Développement Agricole (S.H.A.D.A.) became in 1942 one of the most important factors in Haitian economic life. In Oct. 1942 S.H.A.D.A. signed an agreement with the Rubber Reserve company, a United States government corporation, for the planting of about 100,000 ac. of cryptostegia, a rubberproducing vine; this project was terminated, however, in 1944 as a result of the rapid expansion of the production of low-cost synthetic rubber in the United States. S.H.A.-D.A. also participated in a contract in May 1942, involving the White Engineering corporation, the Haitian government and the Export-Import bank, by which S.H.A.D.A. undertook to assume certain public works projects not yet completed by the engineering corporation. Haiti and the United States signed agreements in April 1942 which provided for the planting of 24,000 additional ac. of sisal, and a credit of \$500,000 extended by the Export-Import bank to the Banque Nationale de la République d'Haiti to maintain the gourde-dollar relationship.

Some Haitians feared even in 1943 that the emphasis on rubber production would lead to serious problems after the war; following a visit by President Lescot to the United States, this aspect of Haitian economy was covered by a Washington announcement, issued in November, that a study of postwar possibilities for small Haitian industry would be made, that an additional \$9,600,000 would be spent on the rubber project and that United States experts would be made available for advice on island problems. A United States sanitary commission (a unit of the Institute of Inter-American Affairs) was organized early in 1943 to work in close cooperation with the Haitian national health service. Haiti began large-scale work during the year under an agreement with the United States Commodity Credit corporation for the planting of 100,000 cuttings of derris root for the extraction of rotenone in preparation of insecticides. The republic also stepped up its production of loofa sponges and lignum vitae. Shipping to Haiti increased during 1943 with the lessening of the submarine menace in the Caribbean, and general economic conditions were hence better. War shortages continued to be felt, however; little newsprint was available for Haiti's 52 publications, and most newspapers were reduced to two pages. The government in March ordered goods to be moved by boat whenever possible; export of staple domestic foodstuffs was also prohibited in the same month.



Elie Lescot (right), president of Haiti, being greeted at Washington Oct. 14, 1943 by President Roosevelt and Representative Sol Bloom (left), chairman of the house foreign affairs committee. Mrs. Roosevelt is in the background. Lescot was ousted in a military coup of Jan. 1946 and went into exile in the United States

Politics, National and Hemispheric.—The principal political events in Haiti in 1941 centred about the presidential election. The constitution of 1935 had prohibited more than two successive terms for the president, but the national assembly in March unanimously reelected President Vincent for a third term and proposed a plebiscite to obviate the constitutional difficulties. Public opinion was strongly aroused, however, and expressed itself in mob protests. President Vincent hence stepped aside and Elie Lescot, Haitian minister to the United States for a number of years, was elected on April 15; he took office May 15, 1941. Haiti negotiated agreements with the United States in May and Sept. 1941 by which the latter country relinquished fiscal control in Haiti. Such control had extended back to a treaty which United States pressure had compelled Haiti to accept in 1916, although it had been partially surrendered in 1932-34. The functions formerly exercised by the United States fiscal representative were transferred in Sept. 1941 to the mixed council of administration of the national bank of Haiti, which became the property of the Haitian government. Following the Japanese attack on Pearl Harbor, Haiti promptly declared war on the major axis powers and immediately placed its facilities at the disposal of the United States. United States on Sept. 16 extended lend-lease materials valued at \$1,100,000 to aid in the development of Haitian

Throughout 1942 the Haitian government co-operated actively in connection with the hemispheric war effort. It extended the suspension of constitutional guarantees for the duration of the war, ordered all citizens outside of the republic to return and required all males between the ages of 18 and 40 to register in January. The government instituted controls over both axis property and the movement of United States currency. It also levied a defense tax of \$1 on each bag of the 1942-43 coffee crop to

finance defense measures. A department of national defense was created. President Lescot in March and April made a trip to Washington to confer with United States officials. Study of the English language became compulsory in Haitian schools on Oct. 1, 1942. The government early in the year introduced complete regulation of automobile, tire and gasoline sales. It also established price and export controls and created a special commission to supervise the production and sale of rice. The most important single control measure designated a number of articles as of primary necessity, including building materials, pharmaceutical products, wheat flour and lard, for most of which price ceilings were fixed and for which the government reserved the right to take up existing stocks to assure the most advantageous distribution. Cotton production was aided by a United States guarantee to purchase surplus

Haiti was responsible in 1944 for another example of the familiar Caribbean and Central American manoeuvre of continuismo (the extension of an incumbent president's term of office by constitutional amendment or adoption of a new constitution). The national assembly on April 19 amended 16 articles of the constitution, as a partial consequence of which the term of President Lescot, which was due to expire in 1946, was extended for five additional years, to May 15, 1951. Elections of senators, deputies and mayors were postponed until one year after the end of World War II, and the president was authorized to fill by appointment any vacancies occurring during that period. Another amendment empowered women to fill any of those three positions. The legal status of women was further improved by a decree-law in Jan. 1944 which improved their position in business and the professions by giving them title to their salaries after contribution of a proper share to the upkeep of the home. Naturalized citizens were granted full civil rights by the amended constitution. In spite of some evidences of popular dissatisfaction, President Lescot was inaugurated for his extended term on May 15, 1944.

Few developments of political importance occurred in 1945. The only disturbing incident was the announcement by the government on Aug. 13 that two men, sentenced to death in March for a conspiracy to assassinate

Pres. Lescot, had been executed. Five other persons were arrested for distributing leaflets against the government, and it was reported that military censorship was decreed June 17 in an effort to preserve public order.

Haiti took part in the Inter-American Conference on Problems of War and Peace at Mexico City early in 1945, and in the United Nations conference at San Francisco in the spring of that year. The national assembly on Aug. 8 unanimously approved ratification of the United Nations charter. A decree published on Aug. 27 ended censorship on correspondence both at home and abroad. The Haitian quota to the United Nations Relief and Rehabilitation administration's funds was set at \$40,000, with the understanding that the contribution would be increased later if possible. The government in December ratified a cultural agreement with Venezuela.

Gradual Economic Revival.—Prosperity returned to some extent in 1944. Increased shipping made markets available and higher prices brought greater returns. The banana industry especially demonstrated recovery both in the volume and value of exports, the more remarkable since a serious storm in the Artibonite valley in July 1944 destroyed more than a million stems on the limb, thus considerably reducing the harvest. After the abandonment of the cryptostegia rubber program in 1944, an expanded food production program was begun by the government with technical and financial assistance from the U.S. Office of Inter-American Affairs. The U.S. Foreign Economic administration entered into an agreement with the Haitian government to purchase corn, rice and beans, and the U.S. Commodity Credit corporation agreed to buy up to 250,000 lb. of rotenone roots in the period to May 7, 1946. The previously negotiated health and sanitation agreement was extended in October for a period of three years, with Haiti contributing \$150,000 and the United States twice that amount. The government on Feb. 25, 1944, expropriated axis assets, which had been frozen soon after United States entrance into the war.

The economic situation of the republic was characterized as fairly good during 1945 and 1946, although some shortages, such as newsprint, continued to be felt, and imports were still limited in quantity and variety.

Lescot Ousted.—The relative domestic calm which had characterized Haitian affairs for several years was shattered by events in Jan. 1946 which led to a violent change in the government. Disturbances broke out in Port-au-Prince early in the month, and in an effort to meet the situation, President Lescot resorted to a reorganization of his cabinet on Jan. 10. This action was followed the next day, however, by an army coup d'état, led by Major Frank Lavaud. which immediately forced the resignation of Lescot as president; he was exiled to Miami, Fla., on Jan. 14. The

		Hait	i. Statistical Data			
	1938	*	1940		1945	
Item	Value (000's omitted)	Amount or Number	 Value (000's omitted) 	Amount or number	Value (000's omitted)	Amount or number
Exchange rate		1 Gourde = 20 cents*		1 Gourde = 20 cents*		1 Gourde = 20 cents*
Finance Government revenues Government	\$5,685 (£1,163)		\$6,837† (£1,696)		\$4,397 (£1,091)	
expenditures National debt	\$5,754 (£1,177) \$8,648 (£1,769)		\$6,637† (£1,646) \$13,248† (£3,286)		\$8,503 (£2,110) \$9,863 (£2,447)	
Transportation Railroads Highways		160 mi. 1,129 mi.		158 mi. 1,426 mi.		
Crops Sugar cane Coffee Cotton		44,974 tons 27,668 ,, 5,181 ,,				
Exports—Total Coffee Cotton Sugar (raw and	\$6,946 (£1,421) \$3,465 (£709) \$1,052 (£215)	28,000 tons 5,000 "	\$5,399 (£1,410) \$2,049 (£535) \$610 (£159)	1 8,000 tons 3,000 "	\$17,112 (£4,246) \$7,290 (£1,809) \$329 (£82)	33,000 tons 1,000 "
refined)	\$778 (£159) \$647 (£132)	38,000 " 8,000 "	\$983 (£257) \$673 (£176)	34,000 " 9,000 "	\$1,951 (£484) \$1,676 (£416)	32,000 " 10,000 "
Imports—Total Cotton and manufac-	\$7,595 (£1,553)	•••	\$7,940 (£2,073)	•••	\$13,554 (£3,363)	• • •
tures Foodstuffs	\$2,520 (£515) \$1,298 (£265)	•••	\$2,264 (£591) \$1,072 (£280)	3,161 tons 12,624 "	\$3,246 (£805) \$3,661 (£908)	•••
apparatus Mineral oils	\$544 (£111) \$383 (£78)	•••	\$366 (£96) \$400 (£104)	•••	\$229 (£57) \$530 (£132)	***
Education Primary and secondary schools Enrolment		400 50,000				

†1941.

*British value given in terms of U.S. money.

revolt of Jan. 11 resulted in some fighting, with an estimated 14 dead and 100 injured. The army junta, headed by Major Lavaud, promptly pledged free elections for a legislative and constituent assembly, restoration of complete civil liberty and other democratic measures. The United States extended diplomatic recognition to the new regime on April 8. Elections for a new assembly were held May 12, 1946, with almost 1,000 candidates contesting for the 58 seats. It was obvious almost immediately after the election that the Democratic party, representing the mulatto ruling class, had won an overwhelming victory; the final results showed that that party had captured 56 of the 58 seats in the assembly. The body met first as a constituent assembly for the election of a new president and the drafting of a constitution to replace that of 1935. It was subsequently to be reorganized, with the same membership, as a legislative assembly. On Aug. 16, 1946, the assembly elected Dumarsais Estime, a member of the Democratic party, as president. Developments led some foreign observers to conclude that dominance of Haitian affairs by a small and unrepresentative minority of mulattoes in Port-au-Prince would continue indefinitely.

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Halder, Franz

Halder (1884-), German army officer, started his army career as standard-bearer in a Bavarian artillery regiment and served as general staff officer during World War I. He was then attached to the office of the war ministry. General Halder was one of the early members of the nazi party at a time when other high-ranking army officers kept aloof from Adolf Hitler. In 1936 he became a lieutenant general and later that year chief of the general staff. Considered by many as Hitler's No. 1 strategist, he was said to have planned the Polish campaign, the blitzkrieg against France in the west and the initial drive into the U.S.S.R. in 1941. Halder was said to have talked sharply to Hitler and to have disagreed with him on several occasions on the conduct of the war, especially on a winter campaign in the U.S.S.R. and an invasion of England. He was passed up when Hitler bestowed the rank of field marshal on several of his colleagues. Halder was a close friend and associate of Marshal Walther von Brauchitsch and his chief of general staff until the latter was deposed in Dec. 1941. In Sept. 1942 Halder was assigned the task of developing plans for a second winter campaign in the U.S.S.R. but he was dismissed by Hitler in December. Implicated in the attempt against Hitler's life in July 1944, he was imprisoned until the defeat of Germany, when he was taken prisoner of war. He was charged with violations of the international law for the treatment of prisoners by the international military tribunal in Feb. 1946.

Halifax, Edward Frederick L. W., Earl of

The Earl of Halifax (1881-), British statesman, was born April 16, 1881, and was educated at Eton and Christ Church, Oxford. First elected to parliament in 1910, he retained his seat until 1925; in 1915-17 he served in France as a major, and in 1916-18 he was an assistant secretary to the minister of national service. In 1921 he was appointed undersecretary of state for colonies; in

1922 president of the board of education, in 1924 minister of agriculture and fisheries. From 1925 to 1931 he was viceroy of India. After holding various cabinet posts he succeeded Anthony Eden as foreign minister on Feb. 25, 1938, and retained this post through reshufflings of the war cabinets of Neville Chamberlain and Winston Churchill. He was associated with the policy of "appeasing" Adolf Hitler, and, until the actual outbreak of war, credited Hitler's professions of peace. After Sept. 1939 he repudiated his previous policy and urged a vigorous pursuit of the war.

Lord Halifax was named British ambassador to the U.S. on Dec. 23, 1940. Among the notable events of his ambassadorship were the signing of the British-U.S. lendlease pact in Feb. 1942 and the United Nations Relief and Rehabilitation act of Nov. 1943. Named British delegate to the San Francisco conference in March 1945, he attended the first sessions of the United Nations. His resignation as U.S. ambassador became effective on May 1, 1946, when he was succeeded by Lord Inverchapel.

Halsey, William Frederick, Jr.

Halsey (1882—), U.S. naval officer, was born Oct. 30, 1882, in Elizabeth, N.J. An Annapolis graduate, he commanded a destroyer patrol force in World War I and subsequently was commander of the aircraft carrier "Saratoga," commandant of the Pensacola naval air station, and, in 1938, commander of a carrier division.

Halsey led the attack against Japanese bases on the Marshall and Gilbert Islands on Jan. 31 and Feb. 1, 1942. On Oct. 24 he replaced Vice-Admiral Robert Lee Ghormley as commander of U.S. naval forces in the South Pacific. In recognition of his successful command in the battle of the Solomon Islands, he was promoted to full admiral on Nov. 20, 1942. His aggressive naval warfare was continued with the famous battle off Bougainville in Nov. 1943. On June 15, 1944 he was named commander of the U.S. third fleet in the Pacific. He supported General Douglas Mac-Arthur's land forces in the Leyte Island invasion of Oct. 1944, and together with the British routed the Japanese imperial navy in the battle for Leyte gulf. In Jan. 1945 his fleet assisted in the Luzon invasion, and in June and July it directed carrier attacks and shellings against the Japanese islands of Kyushu and Honshu. Admiral Halsey was present at the surrender ceremonies aboard the battleship "Missouri" on Sept. 2.

After his return to the U.S., Halsey relinquished his command on Nov. 22, 1945, and was relieved of active service. Promoted to the rank of admiral of the fleet in March 1946, he was appointed to the national defense council. In April he joined the Pan-American World Airways.

Hambro, Carl Joachim

Hambro (1885—), Norwegian statesman, was born at Bergen on Jan. 5, 1885, and was educated at Oslo university. In 1913 he became editor of the Oslo Morgenbladet, for which he had worked as a university student. In 1919 he was elected on the ticket of the Conservative party to the Norwegian storting, of which he became president seven years later. A fervent believer in the League of Nations, Hambro was elected president of the 1939 assembly which expelled the U.S.S.R. from membership in the League for its aggression against Finland. With the German occupation of Norway in April 1940, he was forced to flee the country and reached the U.S. in July of that year. In 1945, he was chairman of the Norwegian delegation at the San Francisco U.N. conference.

See TRACK AND FIELD SPORTS.

Handball

The sport of handball is sub-divided into two types of games, one-wall and four-wall. While the one-wall game continued to be played almost exclusively along the eastern seaboard of the United States, it was the four-wall game which had been played for years. The latter had evolved on a standardized basis in various countries, and in the United States truly attained national prominence and interest. The classic event of the four-wall game in the United States continued to be the annual tournament held under the auspices of the Amateur Athletic Union.

During the decade 1937-46 there was one outstanding competitor, Joseph P. Platak, who retained in 1937 the title he had won in the previous two years, and was returned the victor six times after 1937, a record unequalled in the history of the sport. In doubles, the New York Athletic club team of Frank Coyle and Edward Linz carried off first honours four times, also a record.

In the one-wall play, the principal competitors and best players originated in New York, and all the national tournaments were held in that city. A feature of the onewall game, unlike four-wall, was the interest created among women players.

A list of the winners for the various classes during the ten-year period follows:

1937

National Four-wall Rankings
Tournament held at Lake Shore Athletic club, Chicago
Singles
Doubles

Singles
Joseph P. Platak, Chicago

Joseph P. Platak & C. R. Weiller,
Chicago

National One-wall Rankings

Harry Goldstein, New York George Baskin and Harry Goldstein, New York

Women's Rankings (One-wall only)

Lucy Caruso, New York

1938

National Four-wall Rankings
Tournament held at Central Y.M.C.A., Memphis
Joseph P. Platak, Chicago Frank Coyle and Edward Linz,

oseph P. Flatak, Chicago

New York National One-wall Rankings

Joseph Garber, New York George Baskin and Harry Goldstein, New York

Women's Rankings (One-wall only)

Lucy Caruso, New York

1939

National Four-wall Rankings Tournament held at Olympic club, San Francisco Joseph P. Platak, Chicago Frank Coyle and Edward Linz, New York

National One-wall Rankings

Harry Michitsch, New York George Baskin and Harry Goldstein, New York

Women's Rankings (One-wall only)

Lucy Caruso

1940

National Four-wall Rankings
Tournament held at Downtown Y.M.C.A., Detroit
Joseph P. Platak, Chicago Joe Gordon and J. L. Goldsmith, Long Beach

National One-wall Rankings

Morton Alexander, New York Morton Alexander and Marvin Hecht, New York

Women's Rankings (One-wall only)

Lucy Caruso

1941

National Four-wall Rankings

Tournament held at Lake Shore Athletic club, Chicago Joseph P. Platak, Chicago Frank Coyle and Edward Linz, New York

National One-wall Rankings

Arthur Wolfe, New York Morton Alexander and Marvin Hecht, New York

Women's Rankings (One-wall only)

Marie Zanetti

1942

National Four-wall Rankings

Tournament held at Olympic club, San Francisco
Jack Clements, San Francisco
J. Gordon and J. L. Goldsmith,
Long Beach

National One-wall Rankings

Joseph Garber, New York M. Ornstein and V. Herschkowitz, New York

Women's Rankings (One-wall only)

Mrs. Lucy West

1943

National Four-wall Rankings
Tournament held at Olympic club, San Francisco
Joseph P. Platak, Chicago Joe Gordon and H. Smith,
Long Beach

1044

National Four-wall Rankings

Tournament held at Lake Shore Athletic club, Chicago Frank Coyle, New York Joseph P. Platak and Robert Quinn, Chicago

1945

National Four-wall Rankings

Tournament held at Town club, Chicago

Joseph P. Platak, Chicago

Sam Atcheson and E. Dettwiller, Memphis

1946

National Four-wall Rankings Tournament held at Olympic club, San Francisco Angelo Trulio, Brooklyn Frank Coyle and Edward Linz,

New York

National tournaments in other branches of the sport were not held in 1943, 1944, 1945, or 1946. (Fr. Ro.)

Handy, Thomas T.

Handy (1892—), U.S. army officer, was born March 11, 1892, in Tennessee, Graduated from the Virginia Military institute, Lexington, Va., in 1914, he specialized in artillery courses at several army war colleges and was a second lieutenant during World War I, rising to the rank of major. He was an honorary graduate of the Command and General Staff school in 1927 and was graduated from the Army War college in 1935, and the Naval War college in 1936.

During World War II, Handy was commanding officer of a field artillery battalion (armoured) 1940–42, and was assistant chief of staff in charge of operations in the war department, 1942–44. On Oct. 22, 1944, he was appointed deputy chief of staff, succeeding Gen. Joseph McNarney, who had been transferred to the Mediterranean theatre. A month earlier, Handy had been promoted to the rank of temporary lieutenant general. His appointment as a full general (temporary) was confirmed by the senate on March 28, 1945, and he was named for promotion to the rank of permanent major general on Jan. 22, 1946.

546 Hannegan, Robert Emmet

), U.S. politician and cabinet Hannegan (1903member, was born June 30, 1903, in St. Louis, Mo. He took his law degree at St. Louis university in 1925, and started his political career in 1933 as a Democratic committeeman of a St. Louis ward. By the end of 1933, he had become chairman of the city central committee and an important figure in the Democratic political machine. During the era of vote fraud investigations in St. Louis and the state of Missouri, Hannegan and some of his followers were accused of being involved in ballot-box stuffing. Hannegan promptly countered with accusations that the Republicans had engaged in fraudulent voting operations themselves. Although the charges were never cleared, the political machine controlled by Hannegan and Mayor Bernard F. Dickmann of St. Louis was defeated in April

In May 1942, Hannegan was proposed by Harry S. Truman, then U.S. senator for Missouri, and appointed by Pres. Roosevelt to the post of collector of internal revenue of the eastern district of Missouri. He was appointed commissioner of internal revenue in Washington, D.C. in Oct. 1943, and became chairman of the national Democratic committee in Jan. 1944. At the Democratic national convention in July of that year, Hannegan was influential in obtaining Truman's nomination for the vice-presidency. He was appointed postmaster general of the U.S. by President Truman in 1945.

Hanson, Richard Burpee

Hanson (1879—), Canadian legislator, was born March 20, 1879, in St. Andrews, New Brunswick, and received his law degree from Dalhousie university in 1901. He practised law in Fredericton, N.B., for a number of years and was active in municipal politics, as mayor from 1918 to 1920 and as city solicitor from 1920 to 1926. He was elected to the house of commons in May 1921, but parliament was dissolved before he took his seat. He was re-elected later that year, and again in 1925, 1926 and 1930, but was defeated in 1935. From 1934 to 1935 he was minister of trade and commerce in the Bennett cabinet. As leader of the opposition (Conservative) party from May 1940 to Jan. 1943, he was particularly noted as an opponent of the draft bill.

Hansson, Per Albin

Hansson (1885-1946), Swedish statesman, was born Oct. 28, 1885, in the province of Scania, Sweden. His formal education was brief, consisting of a short period in a public school. At the age of 24, he became editor of the newspaper Fram, and a delegate to the junior branch of the Social-Democratic party. In 1914, he joined the editorial staff of the official party paper, Socialdemokraten, and by 1917 he was managing editor. Elected in 1918 to the second chamber of the Swedish Riksdag on the Social Democratic ticket, he became minister of defense. Despite his strong antimilitaristic convictions, he continued to serve in this dual capacity, with only brief interludes, until 1926. In 1932, he was elected prime minister and continued throughout World War II in this post. With the start of that conflict, he directed all of his efforts toward maintaining the neutrality of Sweden.

On Dec. 13, 1939, a coalition cabinet was formed under Hansson's leadership. By May 1940 he declared that Sweden would not sanction the use of its territory by belligerents. In June 1941, however, his government acceded to a German demand for passage across Sweden of a division of soldiers from Norway to Finland. As the war progressed, he demanded absolute preparation for defense against aggression and on Jan. 18, 1943, stated emphatically that Sweden, if attacked, would fight. Two months after the end of the European conflict (July 1945), the premier and his cabinet resigned and a new Social Democratic government was formed with Hansson still its leader and prime minister. He died at Stockholm, Oct. 5, 1946.

Harbours

See RIVERS AND HARBOURS

Harper Prize Novel

See LITERARY PRIZES.

Harriman, W. Averell

), U.S. diplomat and business Harriman (1891executive, was born Nov. 15, 1891, the son of E. H. Harriman, railroad magnate. On his graduation from Yale university in 1913, he carried on in his father's enterprises, eventually becoming chairman of the Illinois Central and Union Pacific railroads, as well as a partner in Brown Brothers, Harriman and company. Entering government service during President Roosevelt's first term of office, he served as an NRA administrator, as a member of the business advisory council of the department of commerce, and as director of the raw materials division of the Office of Production Management. In March 1941, he was sent to Great Britain as lend-lease representative, with the rank of minister. He went to Moscow in Sept. 1941 as the head of the American delegation of a U.S.-British joint mission and again in Aug. 1942 at the time of the Stalin-Churchill conferences. Named ambassador to the U.S.S.R. on Oct. 1, 1943, he participated in every major international conference of World War II. On Feb. 14, 1946, he resigned as Moscow ambassador, and on April 10 succeeded John Winant as ambassador to London.

Harris, Sir Arthur T.

Sir Arthur Harris (1892-), British air officer, was born April 13, 1892, in Cheltenham, England. Educated in English public schools, he enlisted during World War I and joined the royal flying corps in 1915, later commanding several squadrons on the western front. He was made an air commodore in 1937, air vice-marshal in 1939, and commander in chief of the R.A.F. bomber command in Feb. 1942. A firm believer in mass raids, Air Marshal Harris developed the "saturation" technique of mass bombing -that of concentrating clouds of bombers in a giant raid on a single city with the object of demolishing it. He applied this method with great destructive effect on axisoccupied Europe from 1942 to the end of World War II. He resigned his command in Sept. 1945, and was awarded the D.S.M. by the U.S. the following November.

Hart, Thomas Charles

Hart (1877—), U.S. naval officer and senator, was born June 12, 1877, in Davidson, Mich. Graduated from Annapolis in 1897, he served in the Spanish-American War and was a commander of submarines in World War I. He was made a rear admiral in 1929 and took command of the Asiatic fleet in July 1939. When the U.S.-Japanese war broke out in Dec. 1941, he was compelled to take up defensive positions in Philippine waters, since the Asiatic fleet was a comparatively light naval force. On Jan. 3, 1942, Adm. Hart was made commander of Allied naval

forces in the Southwest Pacific, but was succeeded by Vice-Adm. C. E. L. Helfrich of the Netherlands navy on Feb. 11. Although placed on the retired list as admiral in July, he was retained on active duty and was appointed to the navy general board. He participated in the trial of Rear-Adm. Kimmel and in the investigations of the responsibility for U.S. unpreparedness at Pearl Harbor. In Feb. 1945 he was chosen by Gov. Raymond E. Baldwin and the Connecticut senate to fill a U.S. senate vacancy. Sitting as a Republican, he opposed the Bretton Woods bill, defended the navy's role at Pearl Harbor, and opposed merger of the U.S. armed services.

Harwood, Sir Henry Harwood

), British naval officer, Sir Henry Harwood (1888– was born Jan. 19, 1888. Entering the royal navy as a cadet at the age of 15, he became a lieutenant in 1908. For two years he served in China and during World War I was torpedo officer on various ships. Promoted to the rank of commander in 1921 and captain in 1928, he joined the staff of the Royal Navy War college in 1934. As commander of the "Exeter" in 1936, he was commended by the governor-general of Trinidad for his part in suppressing the disturbances of that year. In 1939 he led the action against the German pocket battleship "Graf Spee," which was scuttled in the outer harbour of Montevideo, Uruguay; for his distinguished conduct in this battle, he was promoted to the rank of rear-admiral. Sir Henry was appointed lord commissioner of the admiralty and assistant chief of naval staff in 1940.

He became commander in chief of the Mediterranean fleet in 1942 and of the Levant fleet in 1943, with the rank of vice-admiral. Because of ill-health he relinquished his position in April 1943, and retired from the royal navy in Nov. 1945.

Hats, Women's

See Fashions, Women's.

Haushofer, Karl

Haushofer (1869–1946), German geopolitician, was born Aug. 27, 1869, in Munich. He joined the German army as a youth, later became military observer in Japan and commanded a division on the western front in World War I. After the armistice, he became professor of political geography at the University of Munich, and there advanced a theory of geopolitics which he asserted would enable the reich to regain its former status as a world power. (See Geopolitics.) Haushofer was taken into custody by U.S. military authorities in Frankfurt-on-Main in June 1945 and later released. At that time, he said that he had quarrelled with Hitler in 1938.

He also denied reports that his ideas had carried any weight with the fuehrer and declared that he had spent six weeks in the Dachau concentration camp. Haushofer and his wife committed suicide at their Bavarian home, March 10, 1946.

Hauteclocque, Jacques Leclerc de

See LECLERC, JACQUES.

Havana Conference (1940)

See Central America; Cuba; Pan-American Conferences, 1937–46; Pan American Union.

Hawaii

The U.S. territory of Hawaii consists of a group of eight large islands and numerous islets near the centre of the North Pacific ocean, with a total land area of 6,441 sq.mi. The eight islands, of volcanic origin, are Hawaii, Kahoolawe, Maui, Lanai, Molokai, Oahu, Kauai, Niihau. The largest and the youngest geologically is Hawaii, with an area of 4,030 sq.mi. The capital of the territory is Honolulu, situated on the island of Oahu, with a population of 179,326 (1940 census), exclusive of military and naval personnel. The population of the territory in 1940 was 423,330 and had expanded to an estimated 502,122 in 1945, exclusive of military and naval personnel. The racial origin of this population, in addition to the native Hawaiians and the Caucasians from the mainland, is Japanese, Chinese, Korean, Filipino, Portuguese. However, 86% of the population is native born.

Ingram M. Stainback took office as governor on Aug. 24, 1942, and was reappointed July 13, 1946.

Joseph R. Farrington was territorial delegate in congress in 1946.

In 1946, congress appropriated funds to set up, under the division's director, Edwin G. Arnold, a Pacific branch within the division of territories and island possessions, U.S. department of the interior. The branch was established to fulfil the responsibilities of the division for the territory of Hawaii, to carry out administrative duties within the jurisdiction of the department for that area, and to assist the Hawaiian people in every way possible in their progress toward eventual self-government.

The Question of Statehood.—The report of the congressional joint committee's findings on statehood for Hawaii in Feb. 1938 marked the high point to that date in 35 years of effort to obtain treatment for the territory equal to that of the states and recognition of the islands as an incorporated territory of the union and an integral part thereof.

More progress toward statehood was made in 1938 than in all the twoscore years since the voluntary annexation of the islands to the United States. U.S. citizens in Hawaii comprised, on June 30, 1939, more than 80% of the entire population of the territory for the first time in the two-score years since annexation.

This figure would have been higher by nearly 10% had the non-citizen Filipino "nationals" not been classified as aliens.

Meanwhile, on the mainland, the Equal Rights commission had been effecting broader dissemination of the true picture of the islands as one of the necessary steps leading to statehood.

As a result, only 39% of the clippings received from mainland publications erroneously referred to the territory as an insular possession, a colony or as a "foreign country," as opposed to a figure of 89% two years before.

In Jan. 1946, hearings on the subject of statehood for Hawaii were opened in Honolulu by the subcommittee on statehood of the committee on territories, house of representatives. More than 100 witnesses were heard on the 5 major islands.

The committee recommended that the committee on territories give immediate consideration to legislation to admit Hawaii to statehood.

Ingram M. Stainback, governor of Hawaii, appointed a Citizens' Statehood committee to promote and support the cause of early statehood for Hawaii. The committee, guided by an executive board of 17 members, was composed of 280 members, including the legislature, Equal Rights commission, county government heads, representatives of civic organizations and individual citizens. The governor was



Natives of Honolulu watching an emergency hospital burning Dec.
7, 1941, after it had been struck by Japanese high-explosive and incendiary bombs

chairman. Many resolutions favouring statehood for Hawaii were passed unanimously during the year at national conventions on the mainland.

A plebiscite on the question of statehood for Hawaii was held in the territory in 1940; the vote was 67% in favour of statehood. Members of the Lions International Service club of Honolulu in a straw ballot voted 85 to 9 in favour of statehood.

The Japanese Attack.—At 7.55 A.M. on Sunday, Dec. 7, 1941, scores of Japanese planes bombed military installations at Pearl Harbor, Hickam field, Wheeler field, Schofield barracks, Kaneohe naval air station, Bellows field. and sporadically, the city of Honolulu itself. At 8.25 A.M. and at 9.10 A.M. the invaders again renewed attacks. A third attack at 1050 A.M., aimed particularly at Pearl Harbor, was repulsed with heavy loss to the invaders. Japan lost 3 submarines and 41 planes in the attack. Civil-1an casualties numbered 49 dead and many injured. Verified reports later set U.S. personnel losses at Pearl Harbor as 2,340 officers and men killed, 946 wounded. The governor of Hawaii issued a proclamation suspending the privilege of the writ of habeas corpus and declaring martial law. General Walter C. Short issued a statement that martial law had been proclaimed. A military government was set up, exercising executive, judicial and legislative functions. That night, under orders of the military governor, a complete black-out of all lights in the territory between sundown and sunrise was made effective. Provost courts, under martial law, supplanted the district or police courts throughout the territory. The Hawaii chapter, American Red Cross, swung into immediate action. The

Office of Civilian Defense dispensed approximately 1,000 doses of blood plasma following the attack. In addition to emergency meals, the OCD food division stored thou sands of full ration meals at medical aid stations and in school cafeterias

Throughout the early months of 1942, military precautions continued. The military governor of Hawaii ordered new black-out restrictions which provided that no persons, other than those on official business, could be on the streets, highways, parks or beaches, on vehicles or on foot between 6 P.M. and 6 AM. Carrying of lighted cigarettes, cigars or pipes, or the striking of matches in the open during the black-out was forbidden. As a precaution against air attack on the congested area near the water front, the office of the military governor urged that women and children living in the downtown districts move immediately to safer areas. Over 450,000 individuals were fingerprinted and cased for personal history, immunization of the whole population against smallpox and typhoid was completed The population was supplied with 400,-000 adult gas masks, 70,000 built-up masks for children and 32,000 bunny masks for infants.

Guy J Swope, director of the division of territories and island possessions, department of the interior, arrived in Honolulu to put in motion the administration of the federal \$15,000,000 civilian defense fund grant to Hawaii. Persons in the territory could not withdraw more than \$200 a month in cash from banks or other financial institutions. Possession of more than \$200 in currency at any one time by an individual also was prohibited. All U.S. currency in the territory was replaced by U.S. currency on which appeared the overprint "Hawaii."

The Tension Eases.—By 1949, however, the danger of invasion or concentrated air attack had apparently passed. The White House issued a statement saying that an agreement had been reached in Washington for a substantial restoration of certain government functions in Hawaii to the appropriate civilian authorities. Martial law remained in effect, however, and the writ of habeas corpus continued to be suspended. Proclamations were issued by the governor of Hawaii and the commanding general restoring to civil authority the management of civil affairs as of March 10, 1943. Edward J. Ennis, special assistant to U.S. Attorney General Francis Biddle, announced in Honolulu after a lengthy investigation that the ban on issuance of writs of habeas corpus for persons held by the military in Hawaii would stand. Secretary of War Henry L. Stimson announced that the army would accept enlistments by American-born Japanese, many in concentration camps, and train them on the mainland as separate army combat units. The first group of more than 2,600 U.S. citizens of Japanese ancestry sailed from Hawaii as volunteers to train at Camp Shelby, Hattiesburg, Miss., after ceremonies attended by nearly 20,000 persons.

Opposition to Martial Law.—Strong opposition to the practice of trying civilians in provost courts was expressed by leading members of the Bar association of Hawaii. Judge Delbert E. Metzger rejected testimony of Adm. Chester W. Nimitz and Lt. Gen. Robert C. Richardson that martial law was still necessary and ruled in federal court, Honolulu, in 1944 that military government in the Hawaiian Islands was invalid. Army headquarters said the ruling would be appealed and that meantime the office of military governor would function as usual, and violations of general orders would continue to be tried in provost





Thousands of U.S. troops of Japanese ancestry massed at Honolulu, Hawaii, in April 1943, before leaving for the U.S. to receive military training

courts. Later, Lt. Gen. Robert C. Richardson, commanding army forces in the central Pacific area, announced he had voluntarily dropped the title of military governor of the territory. President Roosevelt, in Oct. 1944, announced suspension of martial law in Hawaii and restoration of habeas corpus. The military was to have control only of defense measures in the islands.

In 1946, the U.S. supreme court ruled 6 to 2, Justices Burton and Frankfurter dissenting, that military courts

set up under martial law in Hawaii during the war period had no power to try civilians.

Seismic Wave.—On April 1, 1946, an underwater earthquake near Dutch Harbor, Alaska, sent huge seismic waves which reached an estimated speed of 303 mi. per hour sweeping the Hawaiian Islands. Hawaii reported 10,000 homeless, estimated property damage of \$10,000,000 and a toll of 123 persons killed and 50 missing. The city of Hilo on the island of Hawaii was particularly damaged. President Truman signed a bill Aug. 9 appropriating \$16,300,000 for the relief of the wave victims.

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(E. G. A.; X.)

	Hawaii: Stat	ıstical Data		
	193	В	19	42
ltem	Value (000's omitted)	Amount or Number	Value (ooo's omitted)	Amount or Number
Finance Government revenues Government expenditures National debt	\$20,961 \$16,913 \$36,342		\$22,509* \$18,443* \$38,288*	
Crops Sugar cane Coffee	8,8	335,370 tons 4,519 tons		
Livestock Swine		41,100 31,000 18,000		
Sea products Total	1	7,752 tons 30,000 case		
Manufactures Total	\$134,005† \$103,675† \$4,147† \$2,935† \$2,160†	•••		
Exports—total Sugar‡	\$24,631 1	392,000 tons 87,000 ,, 110,000 ,, 4,000 ,,	\$48,939 \$25,014 \$13,968	754,000 tons 164,000 tons 24,772 gal.
Imports—total Iron and Steel§ Petroleum and products§	\$109,479 \$13,583 \$10,199 \$8,923 \$5,076	•••	\$13,040 \$12,354 \$10,804 \$8,396	···
Education Public and private schools Number of teachers . Enrolment *1940, †1939.		298 4,035 09,422	25° 446	272 3,890 99,773
1740. 1739.	‡To U.S. o	піу.	§From U.S. on	ıy.

Hawthornden Prize

See LITERARY PRIZES.

Hay

The production of tame hay in the United States increased gradually up to World War I, and the crop reached the high record to that time of more than 81,000,000 tons in 1917. Production then trended downward until a low point in 30 years was reached in 1934, when the crop was only 55,270,000 tons. Later, production increased steadily to a record crop of tame hay, 92,204,000 tons, in 1942. Wild hay production was 7,322,000 tons in 1937 and increased to 13,378,000 tons in 1945. Together, tame and wild hay made a total of 83,035,000 tons in 1937 and 105,292,000 tons in the good year 1942.

					Ţ	ab	le	1	-Production of Hay	in the	U.	S.,	1	93	7-	46	5	
1937	•		٠				٠		83,035,000	1942								105,292,000
1738									91.465.000	1943		:		:	:	:	:	. 99,573,000
1737		•	•	٠	٠				86.305.000	1944								97,980,000
1041	•	•	٠	٠	•	٠	٠	٠	94,767,000	1945	•						٠	104,951,000
1741	•	•	٠	•	٠	٠	•	٠	94,238,000	1946			٠					. 95,938,000

The gradual expansion of acreage continued during the period between World Wars I and II-from 1919 to 1939. Some new kinds of hay became more important. Alfalfa gained steadily, mixed clover and timothy declined, soybean, cowpea and lespedeza gained rapidly after 1930. The total acreage of all tame hay was 53,943,000 ac. in 1937 and 59,905,000 ac. in 1945. Wild hay for the same period increased from 12,073,000 ac. in 1937 to 14,311,000 ac. in 1945. The proportions of the kinds of hay crops did not vary greatly during the decade 1937-46. The distribution in 1940 was generally typical of the period, as follows: Alfalfa 30,719,000 tons; mixed clover and timothy 26,750,000 tons; sweet clover 90,700 tons; lespedeza 5,058,000 tons; soybean 656,000 tons; cowpea 1,711,000 tons; peanut 1,092,000 tons; grains cut for hay 4,346,000 tons; miscellaneous 8,517,000 tons; and wild hay 9,700,000 tons. The greatest increases in kinds of hay had been in lespedeza, which became popular in the middle south and doubled its production after 1937. More peanut vine hay was cut during the war years chiefly because of expansion of the crop for nuts.

Table II.—U S. Tame Hay Production by Leading States, 1937-46

1937 1939 1941 1942 1943 1944 1945 1946*			in ا)	millions d	of tons)				
New York		1937	1939	1941	1942	1943	1944	1945	1946*
New York	U.S. Total	73.2	76.3	82.7	92.2	87.2	84.0	91.5	84.4
Wisconsin 4.8 5.6 6.9 7.5 7.0 6.5 7.5 5.7 5.5 5.5 California 4.4 4.5 4.5 4.5 4.8 5.3 5.3 5.5 5.5 Iowa . 3.9 4.9 5.5 6.6 5.0 5.7 5.6 5.1 Minnesota . 4.5 4.7 5.4 5.3 5.3 4.6 4.8 4.5 Missouri . 2.4 3.2 3.3 3.5 3.4 3.7 3.6 Ohio . 3.2 3.3 3.3 3.6 3.5 3.2 3.8 3.5 Millinois . 3.0 3.9 3.6 4.0 3.3 3.4 3.6 3.4 Millinois . 3.2 3.7 2.2 3.2 3.8 3.2 3.8 3.2 3.8 3.4 3.8 3.2 1.8 3.8 3.2 3.8 3.2				4.3	5.9	6.1	5.6	6.3	5.8
California 4.4 4.5 4.8 5.3 5.3 5.6 5.5 5.6 5.1 Lowa . 3.9 4.9 5.5 6.6 5.0 5.7 5.6 5.1 Minnesota . 4.5 4.7 5.4 5.3 5.4 4.6 4.8 4.5 Missouri . 2.4 3.2 3.3 3.3 3.5 3.4 3.6 3.2 3.8 3.4 3.6 3.4 3.6 3.4 3.4 3.6 3.4 3.6 3.2 3.8 3.4 3.6 3.4 3.6 3.2 3.8 3.4 3.8 3.2 2.8 2.7 2.4 2.7 2.6 2.9 2.1 2.2 2.7 3.2 3.3 3.2 3.4 3.2 2.8 2.7 2.4 2.7 2.6 2.6 2.6 2.6 2.6 2.6 2.6 2.6 2.6 2.6 2.6 2.6 2.6 2.6	Wisconsin		5.6	6.9	7.5	7.0	6.5	7.5	
lowa 3.9			4.5	4.5	4.8	5.3	5.3	5.6	5.5
Missouri. 2.4 3.2 3.3 4.3 3.5 3.4 3.6 3.6 Missouri. 3.2 3.3 3.3 3.3 3.6 3.5 3.2 3.8 3.5 Illinois 3.0 3.9 3.6 4.0 3.3 3.4 3.6 3.4 3.6 3.4 Michigan 3.4 3.4 3.2 2.7 2.5 3.8 3.2 3.8 3.2 2.7 2.5 2.8 2.7 2.4 2.7 2.6 Indiana 2.2 2.7 2.7 3.2 3.3 3.2 3.4 3.2 2.7 2.5 2.8 2.7 2.4 2.7 2.6 Tennessee 1.9 2.0 2.1 2.3 2.2 1.6 2.6 2.6 Kentucky 1.6 1.8 1.7 2.2 2.1 1.6 2.5 2.3 Idaho . 2.1 2.1 2.2 2.1 1.6 2.5 2.3 Idaho . 2.1 2.1 2.2 2.1 1.6 2.5 2.3 Idaho . 2.1 2.1 2.2 2.1 1.6 2.5 2.3 Idaho . 2.1 2.1 2.2 2.1 1.6 2.5 2.3 Idaho . 2.1 2.1 2.2 2.1 1.6 2.5 2.3 Idaho . 1.5 1.5 1.6 1.9 1.9 1.9 1.9 2.0 1.9 Virginia 1.3 1.2 1.2 1.4 1.4 1.3 1.7 1.7 Montana 1.2 1.5 1.8 1.9 1.8 1.8 1.8 1.7 IVAbriaska 1.2 1.2 1.5 1.8 1.9 1.8 1.8 1.8 1.7 IVAbriaska 1.2 1.2 1.5 1.8 1.9 1.5 2.1 2.2 1.7 Oregon . 1.5 1.6 1.6 1.6 1.5 1.6 1.6 1.6 1.6 1.5 1.6 1.6 1.6 1.6 1.5 1.6 1.6 1.6 1.6 1.5 1.6 1.6 1.6 1.6 1.5 1.6 1.6 1.6 1.6 1.6 1.6 1.6 1.6 1.6 1.6				5.5		5.0	5.7	5.6	5.1
Missouri. 2.4 3.2 3.3 4.3 3.5 3.4 3.7 3.6 Olhio . 3.2 3.3 3.3 3.6 3.5 3.2 3.8 3.5 Illinois . 3.0 3.9 3.6 4.0 3.3 3.8 3.4 3.6 3.4 Michigan 3.4 3.4 3.2 3.9 3.8 3.4 3.6 3.4 Michigan 3.2 2.7 2.7 3.2 3.3 3.2 3.4 3.2 Indiana . 2.3 2.7 2.7 2.5 2.8 2.7 2.4 2.7 2.6 Centucky 1.6 1.8 1.7 2.2 2.1 1.6 2.6 2.6 Kentucky 1.6 1.8 1.7 2.2 2.1 1.6 2.6 2.5 2.3 Idaho . 2.1 2.1 2.1 2.1 2.1 2.1 2.1 2.1 2.1 2						5.4			4.5
Ohice 3.2 3.3 3.3 3.6 3.5 3.2 3.8 3.5 Illinois . 3.0 3.9 3.6 4.0 3.3 3.4 3.6 3.4 Michigan 3.4 3.4 3.2 3.9 3.8 3.4 3.8 3.2 Pennsylvania 3.2 2.7 2.7 3.2 3.3 3.2 3.4 3.2 Indiana 2.23 2.7 2.5 2.8 2.7 2.4 2.7 2.6								3.7	3.6
Illinois 3.0 3.9 3.6 4.0 3.3 3.4 3.6 3.4 3.6 3.4 3.6 3.4 3.6 3.4 3.8 3.4 3.8 3.2 3.8 3.4 3.8 3.2 3.2 2.7 2.7 3.2 3.9 3.8 3.4 3.8 3.2 2.4 3.2 2.7 2.7 2.2 3.3 3.2 3.4 3.2 2.1 2.1 2.2 2.2 2.4 2.2 2.4 2.2 2.4 2.2 2.4 2.6 2.6 Kentucky 1.6 1.8 1.7 2.2 2.1 1.6 2.6 2.6 Kentucky 1.6 1.6 1.6 1.9 1.9 1.9 1.9 1.9 1.9 1.9 1.9 2.1			3.3	3.3	3.6	3.5	3.2	3.8	3.5
Michigan 3.4 3.4 3.2 3.9 3.8 3.4 3.8 3.2 Pennsylvania 3.2 2.7 2.7 3.2 3.3 3.2 3.4 3.2 Indiana 2.3 2.7 2.5 2.8 2.7 2.4 2.7 2.6 Tennessee 1.9 2.0 2.1 2.3 2.2 1.6 2.6 2.6 Kentucky 1.6 1.8 1.7 2.2 2.1 1.6 2.5 2.3 Idaho 2.1 2.1 2.2 2.1 2.1 2.1 2.1 2.1 2.2 2.1 1.6 2.5 2.3 Idaho 1.2 1.2 1.2 1.1 1.9 1.9 1.9 2.0 1.9 Virginia 1.3 1.2 1.2 1.4 1.4 1.3 1.7 1.7 Montana 1.2 1.5 1.8 1.9 1.8 1.8 1.8 1.7 1.7 Oregon 1.5 1.6 1.6 1.5 1.6 1.6						3.3	3.4	3.6	3.4
Pennsylvania 3.2 2.7 2.7 3.2 3.3 3.2 3.4 3.2 Indiana 2.3 2.7 2.5 2.8 2.7 2.4 2.7 2.6 Lennessee 1.9 2.0 2.1 2.3 2.2 1.6 2.6 2.6 2.6 Kentucky 1.6 1.8 1.7 2.2 2.1 1.6 2.6 2.6 Kentucky 1.6 1.8 1.7 2.2 2.1 1.6 2.5 2.3 2.1 2.1 2.1 2.1 2.1 2.1 2.1 2.1 2.1 2.1 2.1 2.1 2.1 2.1 2.1 2.1 2.1 2.1 2.0 1.9 1.9 1.9 1.9 1.9 1.9 1.9 2.0 1.9 1.9 1.9 1.9 2.0 1.9 1.9 1.9 2.0 1.9 1.9 1.9 2.0 1.9 1.9 1.7 7.7 1.7 7.7 7.7 1.7				3.2	3.9	3.8	3.4	3.8	3.2
Tennessee . 1.9 2.0 2.1 2.3 2.2 1.6 2.6 2.6 2.6 2.6 2.6 2.6 2.6 2.6 2.6 2				2.7	3.2	3.3	3.2	3.4	3.2
Tennessee . 1.9 2.0 2.1 2.3 2.2 1.6 2.6 2.6 2.6 2.6 2.6 2.6 2.6 2.6 2.6 2		2.3		2.5		2.7		2.7	2.6
Idaho 2.1 2.2 2.1 2.1 2.1 2.0 2.1 2.1 2.0 2.1 2.1 2.0 2.1 2.1 2.0 2.1 2.1 2.0 2.1 2.1 2.0 2.1 2.1 2.0 2.1			2.0	2.1	2.3	2.2	1.6	2.6	2.6
Idaho 2.1 2.2 2.1 2.1 2.1 2.0 2.1 2.1 2.0 2.1 2.1 2.0 2.1 2.1 2.0 2.1 2.1 2.0 2.1 2.1 2.0 2.1 2.1 2.0 2.1			1.8	1.7	2.2	2,1	1.6	2.5	
Washington			2.1	2.2	2.1	2.1		2.1	
Virginia 1.3 1.2 1.4 1.4 1.3 1.7 1.7 Montana 1.2 1.5 1.8 1.9 1.8 1.8 1.8 1.7 Nebraska 1.2 .8 1.5 1.9 1.5 2.1 2.2 1.7 Oregon 1.5 1.6 1.6 1.5 1.6 1.6 1.6 1.6 1.5 1.6 1.6 1.6 1.5 1.6 1.9 1.6 1.9 1.9 1.5 1.8 <				1.9	1.9	1.9	1.9	2.0	1.9
Montana		1.3		1.2	1.4	1.4	1.3	1.7	1.7
Nebraska 1.2		1.2	1.5	1.8	1.9	1.8	1.8	1.8	1.7
Oregon 1.5 1.6 1.5 1.6 1.8 1.2 1.4 1.0 1.2<		1.2		1.5	1.9	1.5	2.1	2.2	
Colorado 1.5 1.4 1.9 1.8 1.4 1.4 1.4 1.4 1.4 1.4 1.4 1.4 1.4 1.4 1.4 1.3 1.2 1.2 1.2 1.		1.5						1.6	1.5
Kansas .8 .8 1.5 1.9 1.6 1.9 1.9 1.5 Arkansas .9 1.2 1.4 1.4 1.0 1.2 1.4 1.3 Texas . .8 1.0 1.3 1.4 1.4 1.4 1.3 1.3 North Carolina .9 1.0 1.0 1.1 1.2 1.1 1.2 1.1 1.2 1.2 1.2 1.1 1.2 1.2 1.2 1.2 1.1 1.2 1.2 1.2 1.2 1.1 1.2 1.2 1.2 1.2 1.1 1.2 1.2 1.1 1.1 1.0 1.2 1.1 1.1 1.1 1.0 1.2 1.1 1.2 <td< td=""><td></td><td>1.5</td><td></td><td>1.9</td><td>1.8</td><td>1.8</td><td>1.8</td><td>1.8</td><td>1.8</td></td<>		1.5		1.9	1.8	1.8	1.8	1.8	1.8
Arkansas .9 1.2 1.4 1.4 1.0 1.2 1.4 1.3 1.3 Texas . .8 1.0 1.3 1.4 1.4 1.4 1.3 1.3 North Carolina .9 1.0 1.0 1.1 1.2 1.1 1.2 1.2 1.2 1.2 1.2 1.2 1.2 1.2 1.2 1.2 1.2 1.2 1.2 1.2 1.2 1.2 1.1 1.0 1.2 1.1 1.0 1.2 1.1 1.0 1.2 1.1 1.0 1.2 1.1 1.0 1.0 1.1 1.1 1.0 1.0 1.1 1.1 1.0 1.0 1.1 1.1 1.0 1.0 1.1 1.1 1.0 1.0 1.1 1.1 1.0 1.0 1.1 1.1 1.0 1.0 1.1 1.1 1.0 1.0 1.1 1.0 1.0 1.1 1.0 1.0 1.1 1.0 1.0 1.1 1.0 1.0 1.1 1.0 1.0 1.1 1.0 1.0 <td></td> <td>.8</td> <td>.8</td> <td>1.5</td> <td>1.9</td> <td>1.6</td> <td></td> <td></td> <td>1.5</td>		.8	.8	1.5	1.9	1.6			1.5
Texas 1.0 1.3 1.4 1.4 1.4 1.3 1.3 North Carolina 9 1.0 1.0 1.1 1.2 1.1 1.2 1.2 1.2 1.2 1.1 1.2 1.2 1.2 1.2 1.1 1.0 1.3 1.3 1.1 1.1 1.0 1.3 1.3 1.1 1.1 1.0 1.3 1.3 1.1 1.1 1.0 1.2 1.1 1.0 1.2 1.1 1.0 1.2 1.1 1.0 1.0 1.1 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 9 9 7 1.0 9 9 7 1.0 9 9 7 1.0 9 9 7 1.0 1.0 1.1 1.0 1.0 1.1 1.0 9 9 </td <td>Arkansas</td> <td>.9</td> <td>1.2</td> <td>1.4</td> <td>1.4</td> <td>1.0</td> <td>1,2</td> <td>1.4</td> <td>1.3</td>	Arkansas	.9	1.2	1.4	1.4	1.0	1,2	1.4	1.3
North Carolina	Texas	.8		1.3	1.4	1.4	1.4	1.3	1.3
Vermont	North Caroling	.9	1.0	1.0	1.1	1,2			1.2
Vermont		.7		1.2	1.4	1.0	1.3	1.3	
Mississippi . . . 1.0 1.2 1.0 . . . 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.1 1.1 1.0 West Virginia . <td< td=""><td></td><td>11</td><td>1.1</td><td>.9</td><td>1.1</td><td>1.1</td><td>1.0</td><td></td><td>1.1</td></td<>		11	1.1	.9	1.1	1.1	1.0		1.1
Utoh 1.1 9 1.1 1.0 1.0 1.1 1.1 1.0 West Virginia 7 7 8 9 9 7 1.0 .9 Norrh Dakota 1.0 1.1 1.5 1.3 1.1 1.1 1.0 .8 Georgia . .5 .6 .7 .7 .8 .6 .8 .8 Wyoming . .8 .6 .8 .8 .7 .7 .7 .7 Arizona . .5 .5 .6 .5 .7 .5 .7 .7		.8	1.0	1.2		.9	.9		
West Virginia . 7 .7 .8 .9 .9 .7 1.0 .9 North Dakota . 1.0 1.1 1.5 1.3 1.1 1.1 1.0 .8 Georgia 5 .6 .7 .7 .8 .6 .8 .8 Wyoming 8 .6 .8 .8 .7 .7 .7 .7 Arizona 5 .5 .5 .5 .7 .7 .7 .7	Utah	1.1	.9	1.1	1.0	1.0	1.1		1.0
North Dakota . 1.0 1.1 1.5 1.3 1.1 1.1 1.0 8 Georgia		7.7	Ĵ	.8	.9	.9	.7		.9
Georgia		1.0	1.1	1.5	1.3	1.1	1.1	1.0	.8
7 4 8 7 8 6 7 6		.5	.6	.7	.7	.8	.6	.8	.8
7 4 8 7 8 6 7 6	Wyoming	.8		.8	.8	.7	.7	.7	.7
Al-L 7 4 8 7 8 4 7 A		.5	.5	.6	.5	.7	.5	.7	.7
South Dakota		.7	.6	.8	.7	.8	.6	.7	.6
Maryland		.8	.6	J	1.0	.8	.7	.8	.6
Massachusetts 5 . 4 . 4 . 5 . 5 . 5 . 5 . 5		.5	.5	.4	.5	.5	.5	.5	.6
		.5	.4	.4	.5	.5	.5	.5	.5
South Carolina 4 . 4 . 4 5 4 . 4 5 . 5	South Carolina	.4	.4	.4	.5	.4	.4	.5	.5

Other states produced less than 500,000 tons. *Preliminary estimate.

Methods of hay harvesting changed during the decade as new machines were developed. The tractor had led to the practice of baling hay in the field as it was cut with the new type pickup balers. For barn curing the new haydryer equipment was installed in many dairy barns to improve the quality of the cure and permit quicker handling in the field with less loss from weather damages. A serious shortage of baling wire developed in 1945 and 1946 because of Office of Price Administration restrictions on steel allotments and prices. Many farmers were forced to use twine. The limitations on the output of having machinery, critically needed by farmers because of the labour shortage in the war years, was also a cause of much complaint and had serious effects in many cases. The quality of hay is greatly affected by the time when it is cut and the manner in which it is cured. The feeding value can be increased 25% by cutting at the right stage of maturity. In some areas the shortage of labour and machinery delayed hay harvest so that 40% of the crop

was damaged.

Prices of all hay were steady from 1937 to 1940 at a national average farm price of about \$8 per ton. In 1941 the feed demand was reflected in hay prices and the average rose to \$10.76, in 1943 to \$14.80, 1944 to \$16.40 and in 1946 declined to about \$15 per ton. Alfalfa No. 1 baled in the Kansas City, Mo., market ranged from \$13.58 per ton in 1938 to a top of \$29.08 per ton 1943. Prices generally declined in 1945 and 1946 as the feed shortage became less acute and hay stocks were large. Farm stocks were the largest in ten years except for 1943. The U.S. department of agriculture estimated that a 20% increase over the tame hay acreage during 1937-41 should be raised in the postwar period and called for a 5% increase over that average for 1946. The southern states were urged to expand acreage. Hay had become a more important form of livestock feed than was generally thought. It was estimated that before World War II hay and pasture accounted for more than 50% of the feed for all livestock (90% for sheep, 70% for beef cattle and 60% for dairy cattle, horses and mules). Production of hay in 1945 was high in relation to the number of livestock to be fed. The proper fertilization of meadows increased yields in a number of areas.

Hayseed.-The acreage of hay harvested for seed increased steadily during the decade 1937-46. Seed was so scarce that a price supporting program was introduced by the government in 1942. With the shortage of labour, seed production was favoured, since it requires less labour and at the advanced prices was as profitable as hay raising. By 1944 the six principal legume and grass seeds reached 550,800,000 lb., 31% above 1943 and 38% above the tenyear average. Seed prices were high and the weather favourable for harvesting seed. The crops of 1945 and 1946 were also large but not up to the high record of 1944. The amounts of each of the principal seeds in the crop of 1944 were: Alfalfa 1,124,900 bu., about 7% below the ten-year average because of low yields; red clover 1,734,600 bu., 45% larger than the average; alsike 221,500 bu.; sweet clover 644,200 bu.; lespedeza, a record crop of 267,700,000 lb., two and one-half times the ten-year average production; timothy 1,323,700 bu.; redtop 17,-300,000 lb.; sudan grass 61,300,000 lb. Considerable quantities of grass seeds were sent abroad for relief for farmers in devastated regions. Under the Federal Seed act, imports were strictly controlled. Alfalfa seed imports increased from 4,590,000 lb. in 1937 to 11,508,000 lb. in 1941. Sweet clover seed imports were maintained, but most varieties declined in quantity of imports. (See also AL-FALFA; SOYBEANS.)

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See Societies and Associations.

Hay Fever
See Allergy.

Health, Industrial

See Industrial Health.

Health Insurance
See Social Security.

Hearing Aids
See DEAFNESS.

Heart and Heart Diseases

The most important advance in knowledge of the normal heart during the decade 1937–46 was the recognition of the wide range of its anatomical and physiological attributes. It still remained for anthropometrists to construct tables, nomograms and standards for the definition of what is normal for any given person based on his body build and manner of life. Until that time, the physician had to continue securing for future comparison cardiovascular data of any prospective patient while he or she was still in good health. Serial records of a given individual remained of much greater value than the use of current tables of the range of the normal by any kind of examination based on weight, height and age.

World War II added somewhat to evaluation of exercise tests, but no startlingly new methods resulted. The twostep test, route marching and the score of the Schneider index were found most practicable for the estimation of general physical fitness as well as of cardiovascular reserve. The inhalation of limited oxygen (10%) revealed coronary insufficiency in some patients in whom the diagnosis was clinically obscure; angina pectoris or characteristic electrocardiographic changes might be thus induced on occasion, but careful critical interpretation of the results was needed in every case.

X-ray study of the heart and great vessels became more expert. It was still difficult or impossible to determine, except by careful serial records, the beginning of enlargement of the heart-one of the most important of all evidences of serious heart strain. The injection of radiopaque substances, in particular diodrast, into veins and arteries became a well-established procedure for the diagnosis of a good many obscure cases, in particular congenital anomalies of heart and great vessels. In the so-called tetralogy of Fallot, the diodrast enters the aorta from the right ventricle before it appears in the left ventricle. The commonest method was still injection of the contrast material into one or the other brachial vein to outline the great veins and right heart first, but skill, well-organized technique and experience were needed to get good results and to avoid disagreeable reactions. In doubtful cases of leg vein inflammation and obstruction, diodrast injections were also utilized, but again much experience was needed; not infrequently the interpretation was difficult, and sometimes the very procedure itself might cause phlebitis (inflammation of the veins). Even aortic injections were made to study the renal circulation, but this was still a new and experimental procedure. Kymography, which photographs the heart shadow in systole and in diastole, could on occasion reveal the paradoxical pulsation of a heart muscle scar (myocardial infarct) but fluoroscopy (visual X-ray study) also showed this.

Electrocardiography, which records the electrical activity of the heart, advanced considerably during the decade in two particulars: (1) the establishment of the importance of patterns and (2) the exploration of the heart by leads placed directly on the chest in addition to the usual limb leads. Originally, in the early 20th century, the electrocardiograph was essentially limited to the study of fast, slow and irregular heart action. During the decade 1937–46, there was full recognition of the more or less specific patterns for certain conditions such as (1) damage to the heart muscle in the anterior or posterior wall of the left ventricle caused by acute coronary artery thrombosis, (2) strain of the left ventricle because of high blood pressure

or aortic valve disease, (3) strain of the right ventricle chronically from mitral valve disease, obstruction of the pulmonary circulation (cor pulmonale) or certain congenital heart defects, and acutely from massive pulmonary embolism (acute cor pulmonale) and (4) pericarditis, acute or chronic

The other important advance, the recording of electrocardiograms with an electrode placed on the chest wall directly over various parts of the heart, yielded much information concerning the localization of heart muscle damage and of heart chamber strain; it was still in the stage of further development in 1946.

Other newer methods of examination were under investigation. Thus, catheterization of the heart via the arm veins revealed or confirmed certain congenital anomalies in two ways: (1) the catheter could be seen by fluoroscopy to pass through septal defects or into the aorta from the right heart and (2) the analysis of blood gases, in particular oxygen, revealed shunts, as for example, when there was much more oxygen than normally present in the right auricle when arterial blood entered it from the left auricle through a septal defect, or in the right ventricle due to the passage of blood from the left ventricle, or in the pulmonary artery resulting from blood flow through a patent ductus arteriosus. Even the renal vein could be quite readily catheterized via an arm vein (and the superior and inferior venae cavae) in the study of kidney blood flow.

Another special method of examination, still wholly in the experimental stage, was ballistocardiography—the recording of the jarring of the body by the impact of blood in the aorta with each heartbeat; it is essentially a mechanical pulse record of a special sort. The subject lies on a carefully and delicately balanced table, the vibrations of which are transmitted by mirror and beam of light to a moving photographic film. An attempt was made to utilize the ballistocardiogram as a means of measuring the cardiac output per beat but this was crude and required much correction; it was better to regard ballistocardiography as a method of study per se which might or might not eventually prove to be of some clinical value.

The old established techniques, improved by refinement—history taking and physical examination with expert auscultation and interpretation of heart sounds and murmurs—remained by far the most important part of the study of any individual case, making up at least 80% of the total diagnostic aids.

Incidence of Heart Disease.—During the decade, more accurate but still inadequate calculations were made of the incidence of heart disease in toto, and particularly of the relative incidence of the different kinds of heart disease in various parts of the world. There was confirmation of the infrequency of rheumatic heart disease in the tropics, and yet it had been found even in the South sea islands. Hypertension, once thought rare in China, was found there not infrequently. Angina pectoris caused by disease and insufficiency of the coronary circulation was found the world over. What remained to be determined was the relationship of the different kinds of heart disease to ways of life, which required extensive detailed studies of total populations; hospital, insurance and group analyses were not enough.

Congenital Heart Disease.—The greatest advance of all was in the better understanding and treatment of congenital cardiovascular defects, an extremely difficult field much neglected previously. A ray of light was thrown on the aetiology about which there were hitherto only theories; the Australians N. M. Gregg and C. Swan discovered that

German measles during the first two months of pregnancy is likely to lead to a combination of defects in the foetus so that at birth congenital cataracts, microcephaly and congenital heart disease are found; the cardiac lesions noted were patency (remaining open) of the ductus arteriosus and ventricular septal defect. It was even suggested that the hazard is so great that early termination of pregnancy is in order.

The second noteworthy advance was in diagnosis, doubly important now that operative relief or even cure had become possible in some cases. It became essential for the average doctor to be able to recognize patency of the ductus arteriosus so that he might submit patients with this defect to the specialist or even directly to an expert surgeon for ligation without sending patients for long distances who had a different and (in the prevailing stage of knowledge) inoperable condition, such as an auricular septal defect, with which patency of the ductus arteriosus was still often but unnecessarily confused. The pathognomonic sign of ductus patency is a continuous murmur heard with the stethoscope in the pulmonic valve area. Similarly, there were clear clinical proofs of three or four other fairly common and important congenital defects of the heart and great vessels, in particular ventricular septal defect, auricular septal defect, coarctation of the aorta and the cyanotic type of defects, the commonest example being the tetralogy of Fallot. The X-ray and electrocardiograph greatly aided in the development of ability to diagnose these conditions.

The third great advance was in surgical therapy, already mentioned. More exact structural diagnosis became essential. In addition to correction of patency of the ductus arteriosus, it had now become possible in some cases of the cyanotic type to divert a sufficient quantity of the blue blood from the general systemic circulation to the lungs for oxygenation by most ingenious and delicate arterial anastomosis (of innominate or subclavian artery to one of the pulmonary arteries) to improve greatly the colour and vitality of the young children so operated upon. Also the coarcted or narrowed aorta had now been attacked by excision of the affected part and a suturing together of the clamped and cut ends of the aorta above and below. Lively and fruitful interest was focused during the decade on this one relatively small field of heart disease.

Rheumatic Heart Disease.-Doubtless the most important advance in knowledge of rheumatic heart disease in the decade came in the recognition of the need for distinguishing the acute phase from the chronic. In the majority of cases acute rheumatic fever evolves into the chronic form. In many cases, however, all evidence of cardiac involvement disappears (a part of the vital concept of the reversibility of heart disease). Occasionally the acute process recurs superimposed on chronic valvular disease. The majority of deaths in young rheumatic heart cases is primarily due to the acute involvement of the myocardium (heart muscle) by rheumatic inflammation, sometimes during its initial attack but more often due to a flare-up or recurrence. And it is of great importance to note that involvement of the muscle is much more important in such cases than involvement of either the heart valves (endocardium) or the pericardium (lining the sac in which the heart lies). It is this fact that explains much of the cardiac enlargement and of the murmurs in many cases, the subsidence of which was once veiled in mystery and not infrequently disputed even among the experts.

Another well-recognized fact was the dependence of activity of the rheumatic state on the degree of vitality of haemolytic streptococcus infection in any given community

or part of the world or circumstance, such as the herding together of many susceptible young men for military training in the Rocky mountain section of the U.S. The rheumatic process itself still remained a mystery and had no antidote as yet, although some of the symptoms, in particular joint pains and fever, were alleviated and even controlled by salicylates, the specificity of which was occasionally reported but not confirmed.

Moreover, the acute process might remain active for a long time, even for years, if there were recurrent exacerbations, though the usual duration is of some months; it is probably the best policy to keep the victims at rest during this period not only because of evidence of an acute "infectious process" but also because of the fact that the heart itself is involved with the danger of the increase or persistence of cardiac dilatation if much effort or excitement is superimposed on the myocardial strain due to the inflammation itself. Inconclusive experiments were in progress during the decade on prevention of rheumatic fever through control of haemolytic streptococcus infections by sulfonamide rations throughout the winter and spring months; favourable results were reported, but there were two chief reasons why such prophylaxis was not advisable on a wholesale scale but was rather to be reserved for susceptible individuals: (1) the sulfonamides might themselves cause harm by their toxic effects and might even produce myocardial damage and (2) sulfonamide-resistant strains of haemolytic streptococci might be developing which in the end could more than neutralize the early, apparently favourable, results. Also it should be observed that neither the sulfonamides nor penicillin have any therapeutic value in the case of the rheumatic process itself.

The question of seeking a more favourable climate for residence by "rheumatic" families was another matter of much concern; other things like occupation, schooling and happiness being equal, such a step could be worth while, but the protection was by no means complete and families separated by such a measure might become unhappy. This extensive and depressing disease continued to rank first as a cause of death and disability in the second decade of life.

Subacute Bacterial Endocarditis.-Closely linked to the two subjects just presented was a dread disease hitherto almost invariably fatal (that is, prior to the decade 1937-46) but now happily curable in the majority of cases—direct infection of the heart's lining by the streptococcus viridans. It was, of course, in the therapy of this disease that the greatest advance had come, but there were three other aspects demanding consideration too. It had become more and more evident that the responsible streptococcus is an occasional invader of the blood stream even in apparently healthy individuals who present no favourable ground for the settling down and growth of the organism in the body and that a common, probably by far the most common, source of origin of the blood stream invasion is via dental infection and extraction (in at least 50% of cases). Second, every person with rheumatic valvular disease or congenital cardiovascular defects (with the probable exception of auricular septal defects) should watch for and report at once any unexplained malaise or fever which has often in the past been allowed to continue for weeks before a correct diagnosis has been made, thus losing an early and doubtless more favourable opportunity for curative treatment. Third, even though chemotherapy may control the infection and give promise of complete recovery from the presenting illness there are three hazards

which may upset the favourable course of the patient and even lead to relatively early death. These are congestive heart failure, peripheral (or pulmonary) embolism and acute rheumatic myocarditis. These complications are not at all rare.

Prior to 1939, when sulfonamide therapy became available, the mortality from subacute bacterial endocarditis exceeded 99%. With the sulphur compounds, about 6% of the cases recovered during the next few years. But it was only with the advent of adequate penicillin dosage of 400,000 or more units in 24 hours over a period of several weeks that striking relief came early in 1944. When sufficient penicillin was administered, three-quarters of the patients recovered, a dramatic change from the less than 1% prior to 1939. In rare cases it may be necessary to give several million units daily; however, some kinds of penicillin, e.g., X, have a higher specific effect on the streptococcus viridans than do others and hence require smaller doses for curative action.

Other Infectious Types.—Cardiovascular syphilis fortunately continued to decline in incidence and severity in communities where preventive measures, early diagnosis and adequate treatment were well established. Diphtheria again cropped up here and there during World War II to damage the heart in a few patients, especially in the case of those with unrecognized skin diphtheria. Two interesting and common virus diseases, previously exonerated as causes of heart disease—mumps and influenza—were shown capable of seriously affecting the heart muscle in rare cases. This raised the possibility of milder undiagnosable involvement in other cases.

Endocrine Factors.—These factors, in relation to the heart, became clearer. A high metabolic rate, as in thyrotoxicosis, was associated with little coronary atherosclerosis, though the burden of excessive rates, now happily controlled by adequate and early treatment, can impose severe strain on the heart. It is even thought advisable to try thyroid extract itself in aftempts to reduce the progress of coronary heart disease in young persons who show unusually low basal metabolic rates and high blood cholesterol content. The small heart in Addison's adrenal disease was found to dilate and increase rapidly in size, with the development even of congestive heart failure, when specific therapy by desoxycorticosterone acetate is pushed too rapidly; in fact, quantitative measurement of heart size by X-ray remained one of the best guides in following treatment of Addison's disease. The relationship of sex to any disease rarely had been more strikingly manifested than in the remarkable preponderance of the male sex in coronary heart disease under the age of 40 (24 to 1, or 96 to 4 in a series of 100 cases reported in 1937 by R. E. Glendy, S. A. Levine and P. D. White); this relationship demanded detailed study with respect to factors of the degree of masculinity and of metabolic function.

Hypertensive Heart Disease.—During the decade, this disease ceased being a hopeless and uninteresting condition even though the fundamental cause of hypertension itself in the great majority of cases remained obscure. The advent of measures to reduce the blood pressure very appreciably in a good many cases of serious hypertension, malignant and otherwise, even though arduous and cumbersome, resulted in relieving the cardiac load sufficiently to get rid of heart failure and to improve very much the electrocardiograms and X-ray pictures of such cases, thus demonstrating further the reversibility of heart disease which, in this particular kind of heart trouble, had rarely

occurred with former therapy. The therapy that had produced this favourable effect was especially the improved lumbodorsal sympathectomy introduced by R. H. Smithwick. The majority of cases showed much improvement so far as heart strain was concerned, despite disadvantages which had to be balanced against the gains secured.

Further studies of hypertension during the decade revealed the importance of transient or paroxysmal blood pressure elevation as a threat to the heart and arteries, and the great need in this connection of an adequate method of determining the percentage of each 24 hours in which appreciable hypertension occurs. Often the blood pressure in a given patient is found elevated in the doctor's office, for example, and yet normal when the patient is at rest at home. How much elevation of pressure, and for how long, was to be regarded as a hazard demanding the current effective radical therapy and remained unknown.

Coronary Heart Disease.—Comments have already been made above concerning the possible or probable relationship of cholesterol metabolism and sex to the early development of an important and crippling degree of coronary artery atherosclerosis. Another aetiological factor demanding investigation was autonomic nerve imbalance based on experimental studies of G. E. Hall, who conclusively showed that parasympathetic (vagal) stimulation carried out for a long enough time produces serious, indeed fatal, coronary heart disease as well as other lesions in the dog, conditions not normally found but which can be prevented by the inhibiting effect of atropine.

Doubtless the most important development in the knowledge of coronary heart disease, however, was the proof by simple careful clinical follow-up studies of the fact that much of the disability from angina pectoris and acute coronary thrombosis is temporary, lasting weeks, months or a few years in the former and much less in the latter, and clearing completely or in large measure upon the slow establishment of an adequate collateral coronary circulation and upon the healing of the myocardial scar. Thus there are all grades of trouble, but even with severe angina pectoris decubitus or quite large myocardial infarcts the illness may be acute or subacute with good recovery and survival for a good many years of a useful and happy life. This truth was in striking contrast to the old traditional fatalistic view of angina pectoris. This very change in prognostic outlook in coronary heart disease naturally raised much doubt about a variety of methods of treatment tending to be inadequately controlled, including drugs by mouth (except for the nitrites), injection of testosterone, radiotherapy and operative procedures such as sympathectomy (except as a symptomatic measure), total thyroidectomy and direct plastic operations on the heart itself to aid in the development of collateral vessels. This experience did not mean that such efforts should cease but rather that investigators should be very critical and should not regard past attempts as more than the beginning of work along these lines.

Pulmonary Embolism and the Acute Cor Pulmonale.—One of the most important and interesting advances in knowledge of cardiovascular disease during the decade concerned obstruction and hypertension in the pulmonary circulation and their direct effect on the heart. By far the commonest cause for such is pulmonary embolism, long well-recognized as a postoperative or postpartum complication but only much later appreciated to be even more common in medical patients, especially in those with heart disease and heart failure where both lung signs and symptoms and leg vein thrombosis are so easily masked by the results of the heart disease itself. The greatly preponder-

ant site of the thrombosis that originates the embolism is in the leg veins (especially in the calves) and not in the right heart chambers as once thought; this leg vein thrombosis may produce no symptoms or signs and be discovered only at autopsy or operation. The episodes of pulmonary embolism, often recurrent, are frequently misunderstood and labelled "pneumonia" or "heart attacks," but any acute illness, especially in a cardiac patient, consisting of an abrupt feeling of something wrong in the chest with sharp elevation of pulse and usually also of respiration and temperature should be viewed with suspicion and studied carefully even though there may be no early signs in the chest, blood spitting or X-ray evidence. In a few (about 10%) of the cases the embolism may be massive enough to cause acute dilatation of the right heart chambers, labelled the acute cor pulmonale, with a distinctive electrocardiographic pattern, which on occasion is a vital clue.

Since pulmonary embolism with or without infarction is the most common complication of congestive heart failure which leads to death and since the prevention thereof, or of recurrent attacks, may prolong life and improve health, it became of the greatest importance to make an early diagnosis and to institute treatment. Bilateral common femoral vein ligation remained the procedure of choice and was well borne by the patients requiring it. Ligation of the superficial femoral veins does not guard against thrombi discharged from the profunda femoris veins, and unilateral ligation is generally inadequate since in the majority of cases both legs are involved and the most dangerous clots may come from the leg that seems the more normal. Anticoagulant drugs, heparin and dicoumarol, had also been used, especially in postoperative cases, to reduce the frequency of pulmonary embolism and to lower the mortality thereby, but they had the disadvantage of lack of finality, and their use needed to be carefully controlled by frequent checking of the blood prothrombin time.

Heart Failure.-Finally, an important addition to the treatment of heart failure was made to the measures already in use. Rest, digitalis and diuretics had become standard procedures widely known and as a rule well administered, but although it had been recognized for a long time that water balance in the body is largely dependent on the electrolytes and that sodium accumulation leads to water retention, the practical application of the restriction of sodium intake quantitatively in 24 hours was a late development. It was not enough to advise a patient simply to limit salt in his diet; it was necessary to say how much and to show how it could be done by prescribing a specific diet. The usual intake of sodium chloride in the average normal diet has a wide range of from 5 to 15 grams, and it may be necessary simply to reduce the particular patient's intake a little to get results; on occasion, however, a reduction to an intake of only 11/2 to 21/2 grams of salt daily may be needed to clear oedema. Under such circumstances, water is to be given freely even up to three or four litres a day with good diuretic effect. This change from the old historic custom of severe reduction of fluid intake, to one litre (quart) for example, resulted in much improvement in the therapy of congestive heart failure and of other types of congestion as well, with reduction of the need of the often fatiguing mercurial diuretics and the relief of distressing thirst.

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Heavy Elements

See Physics.

Hejaz

See Arabia.

Helicopter

See Aviation, Civil.

Helium

The production of helium in the United States was 9,500,000 cu.ft. in the fiscal year 1939-40, and 16,173,000 cu.ft. in 1940-41, while output in the second half of 1941 increased to 15,721,000 cu.ft. In 1940-41, the U.S. navy used about 7,000,000 cu.ft., mostly in blimps for coast patrol work, but small amounts were used mixed with oxygen to make an artificial atmosphere for deep-sea diving; the weather bureau used 3,700,000 cu.ft. for the inflation of weather observation balloons, while the army used an unreported amount in the inflation of barrage balloons. Sales for medical, scientific and commercial uses were 1,247,000 cu.ft.

To what extent the war program expanded the helium output was not known at the end of the decade 1937-46.

The original plant at Amarillo, Tex., was increased in capacity, and several additional plants were built at other locations where helium was found to occur. Neither the capacity of these plants nor their output was made public, but an official report stated that postwar demand from private sources, over and above government demands, could be met up to 10,000,000 cu.ft. monthly, at a price of about one cent per cubic foot.

Aside from the applications mentioned above, new war uses were largely in metallurgical lines, especially in the provision of an inert atmosphere for the arc welding of magnesium alloy sheets for aeroplane wings and the welding of defects in magnesium castings. Aside from its use in the building of planes, helium was also used to lighten the dead load of planes, as 13 lb. of helium could replace 92 lb. of air in the inflation of a 110-in. landing tire.

(G. A. Ro.)

Helsinki

In 1812 a Finnish fishing village housing 3,000 people in wooden huts, Helsinki (Swedish Helsingfors) had become by 1937 a capital city with a population of 293,000 (pop. 1939, 304,965). The squares of white stone houses in the classical style of the 19th century and great public buildings of the early years of Finland's independence—especially Siren's parliament house and Saarinen's magnificent railway station—made Helsinki a worthy capital. In

Gutted street in a suburb of Helsinki, Finland, after a bombing raid by soviet planes in 1944



the years after 1937, the population increased rapidly, reaching 347,000 by the end of 1945, and some important new buildings were erected, including vast residential blocks in the Töölö quarter.

In the Russian "winter war" (1939-40) and the renewed Russian war (1941-44) the Russian bombing was unconcentrated and inaccurate—almost the first building to be destroyed by Russian bombs was the Russian legation—and in comparison with other raided capitals Helsinki suffered little; only 259 houses were hit and 1,830 rooms destroyed.

By 1946 the city had almost its prewar aspect. Helsinki was clean and light again, most of the war damage had been repaired, the university and the theatres were flourishing and factories and offices were hard at work. But because of the armistice terms the people were ill-clad and underfed, flats were overcrowded (a maximum of one room per person was strictly enforced), the direct railway line to Finland's second city, Turku (Abo), was cut and there were no longer any air lines between Finland and the western world. (J. H. JN.)

Hemp

Most of the world's hemp crop was grown in the U.S.S.R., Italy and Yugoslavia prior to World War II. United States imports were about 955 tons in 1937, principally from Italy and Yugoslavia. Germany and Italy were trying to develop a method of spinning the fibre as a substitute for cotton, and had made considerable progress before 1939.

Prior to 1940, only Wisconsin and Kentucky produced U.S. hemp in any quantity. The control of the crop was taken over by War Hemp Industries, Inc. in 1943, and the acreage was increased 60%, grown under contract.

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The crop of 1943 amounted to ten times that of 1942 and would have been larger had not unfavourable weather caused heavy losses. As the shipping situation improved in 1944, acreage was reduced more than two-thirds and production dropped off to 67,490,000 lb. Further reduction occurred in 1945 with the end of the war emergency need. During the war, 42 plants were built to process the crop; most of them were closed in 1945. U.S. production could not compete with the low cost in other countries. By 1945, the total crop was reduced to 7,300 acres in Wisconsin for fibre and 1,200 acres in Kentucky for seed, compared with 72,600 acres in 1944 in five states. The crop of 1946 was further restricted. (I. C. Ms.)

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Henderson (1895—), U.S. economist, was born in Millville, N.J., on May 26, 1895. In 1917 he entered the U.S. army as a private, attaining the rank of captain of ordnance by 1919. In 1920 he returned to Swarthmore college, Swarthmore, Pa., where he received his B.A. degree. During the early New Deal era, he served as consulting economist to the Works Progress (later Work Projects) administration. One of the most important of the New Deal economists, he was largely responsible in 1938 for the Temporary National Economic committee's investigation of business and economic conditions and disclosure of monopoly activities. In 1939 he was appointed

to the Securities and Exchange commission. In April 1041 Pres. Roosevelt created the Office of Price Administration and Civilian Supply (later renamed the Office of Price Administration) and appointed Henderson as its head. Resigning his post with the SEC, Henderson was also appointed to the civilian supply division of the War Production board. Henderson predicted that his efforts to impose rationing and other restrictions on the United States would make him the most unpopular man in the country. In Dec. 1942, as his prophecy seemed to be approaching fulfilment, he resigned from both the WPB and the OPA; the latter resignation was effective on Jan. 20, 1943, when Prentiss M. Brown succeeded him. In May 1943 Henderson joined the Research Institute of America as chairman of the board of editors. He was sent abroad by the U.S. government in Feb. 1945 to examine the problem of the economic control of Germany, and in March held an assignment from the Chinese government to study price problems in China. In April he returned to the Research Institute as chief economist.

Henderson, Sir Nevile Meyrick

Sir Nevile Henderson (1882-1942), British statesman, was born June 10, 1882. A graduate of Eton, he entered the diplomatic service as third secretary at St. Petersburg, Russia, in 1905. He also served in Tokyo and Rome and in 1916 was sent to Paris as first secretary; he was counsellor in Constantinople, 1921, and acting high commissioner there, 1922-24. He was minister to Cairo, 1924, held the same post in Paris, 1928-29, was envoy to Belgrade, 1929-35 and ambassador to Argentina and minister to Paraguay, 1935-37. Sir Nevile was Britain's last ambassador to Berlin, 1937-39, before the outbreak of World War II. He staunchly defended Chamberlain's appeasement policy and in the final weeks before the outbreak of war, shuttled between England and Germany with the hope of averting hostilities. After his return to England, he wrote Failure of a Mission (1940), an apologia of his ambassadorship to Berlin. Sir Nevile died in London, Dec. 29, 1942.

Henlein, Konrad

Henlein (1898-1945), Sudeten-German politician, was educated at a commercial academy and became a bank clerk and later a gymnastics instructor. He was head of the German gymnastics movement (Deutsche Turnbewegung) in Czechoslovakia from 1923 to 1933, when he appeared as leader of the Sudeten-German home front, a party which demanded autonomy for Sudeten-German areas and which became the second strongest party in the Czechoslovakian chamber in 1935. When the party revolted against Czechoslovakia in Sept. 1938, Henlein demanded the cession of the disputed territory to Germany and the revocation of martial law. When his party was suspended for treasonable activities, Henlein fled to Germany to escape arrest. His Sudeten-German "Free Corps," which he then organized, engaged in skirmishes along the frontier until the Czechoslovakian crisis approached its climax. On Oct. 1, 1938, after the four-power conference at Munich had ceded the Sudeten-German areas to Germany, Henlein was appointed by the German government as commissioner for that territory and later became the regional party leader of Sudetenland. Seized by U.S. troops in May 1945, Henlein committed suicide.

Henriot, Philippe

Henriot (1889–1944), French politician, was born at Reims on Jan. 7, 1889. He was a school teacher by profession until his election to the French Chamber of Depu-

ties as member from Bordeaux in 1932; he was re-elected in 1936. Denouncing the liberal and leftist elements in the chamber, he gradually attached himself to the growing French fascist cliques. Although Henriot was outspoken in his attacks against the nazi government, he quickly revised his political slant after the German invasion in 1940 and became an archcollaborationist in the Vichy camp. In 1943 the Pétain regime made him supervisor of Vichy propaganda broadcasts; previous to this appointment, Henriot was editor of the notorious pro-German weekly, Gringoire. In Jan. 1944, Pierre Laval named Henriot minister of information and propaganda; the latter then made two radio broadcasts daily, in which he vented his passionate hatred of the British and urged Frenchmen to collaborate with the Germans. On June 28, 1944, a band of French patriots disguised as Vichy militiamen won entrance to Henriot's living quarters in the ministry of information, broke into his bedroom and shot him to death.

Hepburn, Mitchell Frederick

Hepburn (1896—), Canadian politician, was born at St. Thomas, Ontario, Aug. 12, 1896. He was educated at St. Thomas Collegiate institute and spent three years on the staff of the Canadian Bank of Commerce. In 1918 he served overseas with the royal air force. He was elected to the house of commons in 1926 and was re-elected in 1930. In the same year he was chosen leader of the Ontario Provincial Liberal party, and when that party was returned to office at the general election of June 19, 1934, he became premier of the province.

Although Hepburn had been elected on the basis of a vigorous campaign against the power companies, and was largely responsible for the passage of a minimum wage law, he gradually abandoned his liberal policies in 1937–38 when the C.I.O. started its drive into Canada. Declaiming against unions and the "communist menace," he disowned the title of Liberal and broke with Prime Minister Mackenzie King. He resigned as premier of Ontario in Oct. 1942, and as provincial treasurer in March 1943. Elected to the Ontario provincial assembly in Aug. 1943, he was defeated in the elections of June 1945 and shortly thereafter announced his retirement from politics.

Heredity

See GENETICS; PSYCHOLOGY.

Herriot, Edouard

Herriot (1872—), French politician, was born July 5, 1872, at Troyes in Champagne, France. He graduated from the Ecole Normale Supérieure in 1894 and later taught at the Lycées of Nantes and Lyons. He entered politics in 1904 as deputy mayor of Lyons and became mayor the following year. Thereafter he was mayor of the city almost without interruption, being re-elected at each successive electoral contest. In 1912 he was senator from the Rhône and in 1919 deputy from the department. As leader of the Radical party he was premier in 1924–25 and for a brief period in 1926.

The elections of May 1932, marked by a swing to the left, brought Herriot back into power as premier and foreign minister for the third time. His government was overthrown in Dec. 1932, when the chamber rejected his proposal that France continue to pay its war debt instalment to the U.S. He was vice-premier in the Doumergue cabinet (1934) and in the Flandin cabinet (1936), and in June 1936 he was named president of the chamber of

deputies, a post to which he had been elected previously in 1925.

Herriot remained in France after the German occupation in June 1940, showing at first little opposition to the Vichy rule. In Aug. 1942, however, when Marshal Pétain dissolved the permanent bureaus of the senate and the chamber of deputies, Herriot and Jules Jeanneney wrote a vigorous joint protest to the senate. For this he was arrested in 1942 and later deported to Germany. In April 1945, he was liberated from a German prison camp by Russian troops and returned to his native Lyons, where he had been re-elected mayor. President of the Radical Socialist party, Herriot was returned to the constituent assembly during the national elections of Oct. 21, 1945 and June 2, 1946.

Among his best-known publications are Philon le Juif (1897, crowned by the Académie Française), Madame Récamier et ses Amis (1905), Agir (1917), Créer (1919) and Sanctuaires (1938).

Hershey, Lewis B.

Hershey (1893-), U.S. army officer, was born on a farm near Angola, Ind. He was graduated from Tri-State college at Angola, Ind., and taught in public schools there. Entering the Indiana national guard in 1911, he went to the Mexican border with his unit in 1916, and to France with the 197th field artillery in 1918 as a captain. On his return to the U.S. after the war, he was stationed at Fort Sill, Okla., and later at Ohio State university, where he was assistant professor of military science and tactics for four years. He was at the command and general staff school at Ft. Leavenworth, Kan., for two years, then at the Army War college in Washington and for two years in Hawaii. Returning to the U.S. in 1937, Hershey was appointed to the Joint Army and Navy Selective Service committee as executive secretary. He was largely responsible for laying the foundation of the selective service system as authorized by the National Defense act of 1920, and for setting up the operating machinery for its organization when it was authorized by the Selective Training and Service act of 1940. In recognition of this work, he was raised to the rank of brigadier general in Nov. 1940 and was appointed director of selective service by Pres. Roosevelt on July 31, 1941. Promoted to the rank of major general in April 1942, Hershey remained with the selective service administration during the entire period of World War II, assuming major responsibility for the allocation of manpower to the armed services.

Hershey continued in this position after the end of the war and coped with the problems of a peacetime army and draft.

Hertzog, James Barry Munnik

Hertzog (1866–1942), South African barrister and statesman, was born of Dutch stock at Wellington, Cape Colony, on April 3, 1866. He became a judge in the Orange Free State in 1895, and served throughout the South African war of 1899–1902, retaining thereafter his anti-British sentiments. He was minister of justice in the first union cabinet (1910–12), and in 1913 formed an oppositionist party with independence from Britain as its chief plank. Hertzog became prime minister in 1924, minister of external affairs in 1929 and leader in 1934 of the United South African National party. Gen. Hertzog, as representative of the Union of South Africa, attended the coronation ceremonies in London in May 1937, and the

subsequent imperial conference; on his return he stated that the imperial government had failed to keep its promise regarding the handing over of the native territories to the union, but it was later agreed that there had been a misunderstanding on this point.

Hertzog was strongly opposed to South Africa's declaration of war against Germany and resigned as prime minister on Sept. 6, 1939. He also resigned from the United Nationalist party in Nov. 1940 and, a month later, from parliament. In Oct. 1941, he urged at a convention of the Afrikander party that South Africans adopt a national-socialist form of government. He died at Pretoria, Nov. 21, 1942.

Hess, Rudolf Walther

), German politician, christened Rich-Hess (1894ard Rudolf, was born April 26, 1894, at Alexandria, Egypt, the son of a German importer. He studied in Switzerland and Godesberg, Germany. During World War I, he enlisted in the German army, saw heavy fighting at Verdun, and met Adolf Hitler on a French battlefield. After the war, Hess became Hitler's personal aide in the fledgling nazi party; they were side by side in the abortive Munich beer hall putsch of 1923 and were imprisoned together. His loyalty was firm during the critical years of the party's rise to power. Hess controlled the party machine after Dec. 1932, reorganizing and "cleansing" the party and serving as Hitler's personal representative in party affairs and as a member of the secret cabinet. In Hitler's will Hess was named second choice (after Goering) as successor.

On May 10, 1941, Hess flew to Scotland, made a parachute landing near Glasgow, and was then held incommunicado by the British authorities. It was later discovered that he had undertaken this astonishing trip in the self-imposed role of peacemaker. He was nevertheless indicted as a major war criminal by the United Nations War Crimes commission in Aug. 1945, after the end of World War II. He was sentenced to life imprisonment by the Nuemberg tribunal on Oct. 1, 1946.

Hewitt, Henry Kent

Hewitt (1887—), U.S. naval officer, was born Feb. 11, 1887, in Hackensack, N.J. Graduating from the U.S. Naval academy in 1906, he was commissioned ensign in 1908. He was decorated with the navy cross in World War I. After that war he served as commander of a destroyer division, fleet gunnery officer and trainer, instructor at the Naval academy, and inspector of ordnance at Puget sound.

When President Franklin D. Roosevelt took a cruise to South America on the "Indianapolis" in 1936, Hewitt acted as commanding officer. He was promoted to the rank of rear admiral in Dec. 1940.

Admiral Hewitt was named to command the U.S. naval units in the huge Allied fleet that protected the U.S. landings in North Africa on Nov. 8, 1942. He led the naval engagement that helped force the surrender of Casablanca, and in recognition of his services was made vice-admiral in Nov. 1942. His 8th fleet also played a part in the Sicilian campaign in 1943 and in the attack on the Italian mainland, particularly the landings at Salerno. In Aug. 1944, he was placed in command of all Allied naval forces in the invasion of southern France. Promoted to the rank of admiral in March 1945, he was assigned two months later to conduct further investigations into the Pearl Harbor attack. On July 14, 1945, he was appointed commander of U.S. naval forces in Europe.

Heydrich (1904-1942), German gestapo official, was born March 7, 1904, in Halle, Prussian Saxony. At the age of 14 he joined a Free Corps band, where he became schooled in street-fighting, terrorism and looting. In 1922, he joined the navy, rising to the rank of lieutenant, but resigned in 1931 to devote his time to nazi party affairs. Soon after Hitler became chancellor, Heydrich was appointed chief of the political department of the Munich police force, with control over the notorious Dachau concentration camp. In 1934, he was appointed gestapo chief for Berlin and was later made deputy chief of the gestapo under Heinrich Himmler. Ruthless in dealing with "enemies of the state," Heydrich in Sept. 1941 was appointed to supersede Baron Constantin von Neurath as reichsprotector for Bohemia and Moravia. He ordered the execution of 300 Czechs within five weeks after his arrival in Prague. He was also dispatched to Norway, the Netherlands and occupied France to suppress mounting sabotage and terrorism, and his visits resulted in more mass executions which earned him the nickname of "the Hangman." On May 27, 1942, Czech patriots shot him while he was riding in his car on the Prague-Berlin highway. He died the following June 4 in a Prague hospital. Gestapo officials exacted vengeance for his death by executing hundreds of Czechs and wiping out the entire village of Lidice, whose townsfolk were accused of harbouring Heydrich's assassins.

Higashi-Kuni, Naruhiko

Prince Higashi-Kuni (1887—), Japanese statesman, was born Dec. 3, 1887, ninth son of Prince Asahiko-Kuni and second cousin of the emperor. His wife was the ninth daughter of Emperor Meiji, and the prince established in 1906, by order of Meiji, the separate imperial house of Higashi-Kuni. After Higashi-Kuni's return from France, where he was a student from 1920 to 1927, he was given command of an infantry regiment. In 1935 he was named high military councillor and was reappointed to this post in 1937 with the rank of general.

On April 16, 1945, Higashi-Kuni was named supreme war councillor. After Emperor Hirohito made his surrender broadcast on Aug. 15, 1945, the Suzuki cabinet resigned "in disgrace," and Higashi-Kuni formed a new cabinet. He assumed concurrently the posts of premier and war minister, and adjusted his policies to the exigencies of defeat and of foreign occupation. On Oct. 5, 1945, Higashi-Kuni resigned. The following month he announced that he had requested the emperor's permission to become a commoner again.

Highways

See ROADS AND HIGHWAYS.

Hillman, Sidney

Hillman (1887–1946), U.S. labour leader, was born at Zagare, Russia, on March 23, 1887. In 1907 he emigrated to the U.S., where he worked first as a clerk, then as a garment cutter. He helped organize the Amalgamated Clothing Workers of America and served as its president almost continuously from 1915 until his death in 1946. He was active politically during all of President F. D. Roosevelt's administrations—as a member of the labour advisory board of the National Recovery administration, on the National Industrial Recovery board, and on the Fair Labor Standards board. Appointed an associate director of the Office of Production Management in Jan.

1941, he played an important part in preventing and settling defense strikes. He was also named to represent labour on the Supply Priorities and Allocations board. In July 1942 Hillman resigned as special assistant to the president on labour matters to return to his old job as president of the C.I.O. Amalgamated Clothing Workers.

As treasurer of Labor's Non-Partisan league in 1936, Hillman campaigned vigorously for the re-election of President Roosevelt. In 1944, as organizer and chairman of the Political Action committee of the C.I.O., he was again instrumental in rallying the labour vote behind Roosevelt. It was charged, at this time, that President Roosevelt told his advisers to "clear everything with Sidney." The principle of conscious participation of labour in political activity was furthered with the formation of the National Citizens Political Action committee, with Hillman as chairman; the committee threw its weight behind special appointments such as that of Henry A. Wallace as secretary of commerce, and endorsed candidates on the congressional and local levels. In Oct. 1945 Hillman was elected one of the vice-presidents of the newly formed World Federation of Trade Unions. Hillman died July 10, 1946.

Himmler, Heinrich

Himmler (1900-1945), German police official, was born Nov. 7, 1900, at Munich. He studied agriculture at the University of Munich and later became a member of the Academy of German Law. In 1927 he became deputy leader of the Schutzstaffel (known as the S.S., Black Shirt or Elite Guard troops) and he was appointed leader in 1929. Himmler was reich director of propaganda, 1926-30, a member of the reichstag and Prussian state council, 1933, commander of the united German police forces, 1936, and deputy head of the reich administration, 1939. He was empowered by Adolf Hitler to suppress antinazi resistance at home and in the occupied countries, and his methods were brutal and ruthless. The fuehrer made Himmler interior minister on Aug. 24, 1943 and by Nov. 1944 it appeared that the gestapo chieftain had assumed executive control over Germany, replacing Goering as the No. 2 nazi. After the Doenitz government was formed on May 1, 1945, following Hitler's death, Himmler went into hiding. He adopted a disguise which might have proved effective, but his identity papers, made out in the name of Hitzinger, aroused suspicion of British soldiers at Bremervoerde and Himmler was arrested on May 21. He revealed his identity and was placed under strict custody. The gestapo chief was able, however, to swallow a vial of poison carried under his tongue, and died a few minutes later on May 23, 1945.

Hiranuma, Kiichiro

Hiranuma (1867—), Japanese statesman, was born Sept. 28, 1867, at Okayamaken, the son of a samurai. He was educated at the law college of Tokyo Imperial university, where he graduated in 1888. In 1906 he became director of the bureau of civil and criminal affairs. Appointed minister of justice in 1923, he was created a peer the following year and a baron in 1926. On Jan. 4, 1939, he was named premier to succeed Fumimaro Konoye. His foreign policy, like that of his predecessor, was based on strict adherence to the anti-Comintern pact and friendship for Germany. He resigned in Aug. 1939 and was made minister of home affairs in the Konoye cabinet in Dec. 1940. Hiranuma was shot and badly wounded by

an assassin in Aug. 1941. In Sept. 1942 he was sent on a mission to the Japanese-sponsored Chinese regime at Nanking where he negotiated a secret treaty with Wang Ching-wei, head of the Nanking puppet government, providing for the autonomy of North China and Inner Mongolia. After the defeat of Japan by the Allies, Hiranuma was arrested as a war criminal.

Hirohito

Emperor Hirohito of Japan (1901—), was born April 29, 1901, the son of Emperor Yoshihito. After attending the peers school, he was commissioned a sublicutenant in both the army and navy at the age of 10. Abandoning his sheltered life in 1921, he toured Europe, thus becoming the first Japanese crown prince to visit the western world. In 1924 he married Princess Nagako



Emperor Hirohito of Japan photographed in the fall of 1945

Kuni. Hirohito became prince regent in 1921 and ascended the throne in 1926, although he was not formally enthroned until Nov. 10, 1928. The era of his reign was called "Showa" or Light and Peace.

The role of Hirohito in the Japanese aggressions has been much disputed. Although his apologists asserted that he was "outside" and "above" politics, he approved the various Japanese acts of aggression from the seizure of Manchuria in 1931 to the attack on Pearl Harbor a decade later. He personally proclaimed the nation at war with the United States and the British empire after the

attack on Pearl Harbor. During most of the war Hirohito remained in semiseclusion, although he had, late in 1941, nominally assumed control of the army. When it became apparent that Japan was losing the war, the position of the emperor became crucial; the government agreed to sue for peace provided the emperor retained his prerogatives. President Harry S. Truman accepted, with the condition that Hirohito be subject to the authority of the supreme Allied commander. After the armistice of Aug. 15, 1945, Hirohito's rule was subordinate to that of General Douglas MacArthur, but he was not included on the list of high-ranking Japanese statesmen indicted as war criminals. Hirohito repudiated war as an instrument of national policy and pledged the introduction of social and constitutional reforms. MacArthur's decree abolishing Shinto as the national religion was followed by a rescript of the emperor on Jan. 1, 1946, in which he disclaimed his divinity. Making public appearances among his people and increasingly subject to the will of the national diet, the divine and absolute character of Hirohito's authority was further modified during 1946.

Hiroshima

During World War II, Hiroshima was the principal administrative and commercial centre of southwestern Honshu, Japan, and the foremost Japanese military shipping point for men and supplies as well as an important military command station and supply depot.

On Aug 6, 1945, Hiroshima was the target of the first atomic bomb attack. The bomb was dropped at 8:15 A.M. from the B-29 "Enola Gay," which, with two observation planes, comprised the striking force. The bombing plane, piloted by Col. Paul W. Tibbets, Jr., commanding officer of the 509th composite group of the 20th air force, was one of many such B-29's based in the Marianas Islands 1,500 mi. away. The 509th group had been specially equipped and trained for delivery of the atomic bomb; the skill of the crew and the good weather encountered made the mission uneventful. There was no opposition except for 20 inaccurate bursts of flak on the return flight. The bomb run was short and straight. The crews of the two escort planes, observing the explosion through protective goggles, reported that the flash after the explosion was deep purple, then reddish. The cloud, shaped like a mushroom, was up to 20,000 ft. in one min., at which time the top part broke from the stem and eventually reached 30,ooo ft. The base of the column of smoke, looking now like a giant grave marker, stood one minute after the explosion upon the whole area of the city, excepting the southern dock area. This column was a thick, white smoke, darker at the base, and interspersed with deep red. At the time of the explosion, the three aircraft were about 15 mi. from the target. Even so, their crews reported feeling two shock waves jar their planes. At a distance of 390 mi., crew members could still see the column of smoke rising into the morning sky.

Of Hiroshima's population of 245,000, reduced by systematic evacuations from a wartime peak of 380,000, about 66,000 were killed and 69,000 were injured. The chief causes of casualties were burns, from the radiant heat from the bomb or from blazing buildings, and mechanical injuries from flying debris and falling buildings. The evidence indicated that burns were the cause of the greatest number of casualties, although the number resulting from mechanical injuries may have been as great. Some injuries



may have been caused by direct blast pressure. Gamma rays and other radiation emitted at the time of the nuclear fission explosion caused "radiation sickness"; about 15% of the total casualties within the two months immediately following the explosion resulted from this cause. Vegetation was affected, but recovered and continued to grow in the area.

Hiroshima was built on the flat delta of the Ota river where it flows into the Inland sea. Though the city limits embraced 26 sq.mi., the main built-up sections were compressed into seven sq.mi. at the heart. The bomb exploded over the centre of the city, and no natural obstacles opposed the uniform spread of its blast and heat. Many fires were started, some by the "flash" heat but most of them ignited during the collapse of buildings. These separate blazes extended eight miles out, where some window glass was shattered. "Japanese-type" dwellings were destroyed or made unusable within an area of six sq.mi., and steel frame buildings within an area of 3.4 sq.mi. Reinforced concrete buildings of earthquake-resistant construction often survived as shells, though gutted by fire and stripped of windows and partitions. Of the 90,000 buildings in the city, 62,000 were destroyed and 6,000 more rendered unusable.

The several thousand small workshops interspersed through the city were wiped out. All utilities and transportation services were disrupted for varying lengths of time. Fire-fighting and rescue services were overwhelmed; only 16 pieces of fire-fighting equipment remained usable. Medical personnel and facilities were 90% casualties. Panic-stricken flight temporarily emptied the city of survivors, seriously hampering relief work. By Nov. 1, 1945, however, 137,000 of the inhabitants had returned; a year later the city was being slowly rebuilt. (C. E. Ly.)

Hirota, Koki

Hirota (1878-), Japanese diplomat, was born in Fukuoka, Kyushu. He entered the foreign service in 1905, serving in Peking, China, London, England and Washington, D.C., before acting as minister to the Netherlands in 1926 and ambassador to the soviet union from 1930 to 1932. He was foreign minister from 1933 to 1936, prime minister from March 1936 to Jan. 1937, and foreign minister once again from June 1937 to May 1938. Maintaining close relations with Mitsuru Toyama, head of the extreme nationalist Black Dragon society, he safeguarded himself against criticism from nationalist circles, while at the same time his statements on foreign policy were generally couched in conciliatory language, and he remained on excellent personal terms with the foreign diplomats in Tokyo. He was called on to head the cabinet formed after the spectacular military revolt of Feb. 26, 1936; his cabinet fell one year later after members of the diet had sharply criticized the army. He then served as foreign minister in the cabinet of Prince Fumimaro Konoye until May 1938. During World War II Hirota continued to be associated with the Black Dragon society, and after the defeat of Japan he was arrested as a war criminal by U.S. troops.

Hispanic America

See Argentina; Bolivia; Brazil; British Guiana; British Honduras; Chile; Colombia; Costa Rica; Ecuador; French Colonial Empire; Guatemala; Honduras; Mexico; Nicaragua; Panamá; Paraguay; Peru; Salvador, El; Surinam; Uruguay; Venezuela.

Hispaniola

See Dominican Republic; Haiti; West Indies.

Historical Association, American

See Societies and Associations.

History, Ancient

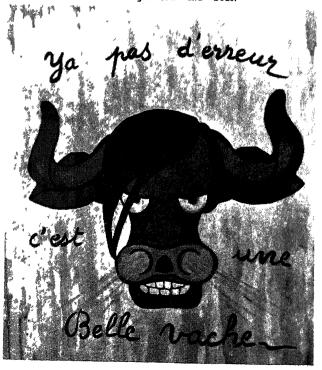
See ARCHAEOLOGY.

Hitler, Adolf

Adolf Hitler (1889-1945?) fanatic genius and scourge of the 20th century, was born at Braunau-am-Inn, Austria, April 20, 1889. His father, Alois (Schicklgruber) Hitler, was a customs official of the Austrian empire in the border village of Braunau. His mother, Klara Poelzl, second cousin and third wife of Alois, was 23 years younger than the latter; she had been a maid of Alois' second wife. The father died when Adolf was 13 (1903) and the mother when he was 19 (1908). The boy went from an unhappy home to become an artist in Vienna-and that was also an unhappy experience. He began to blame his personal failures on society, and especially on the Jews. Shortly before World War I began, he wandered to Munich and entered the German army in 1914. He was doubtless a good soldier, and won the Iron cross, but the fervour of his love for the German fatherland did not win him promotion beyond the rank of lance corporal. In a hospital at the moment of the Armistice, he felt all the more keenly his personal inability to save Germany from its fate.

In the years of chaos and futility after 1918 he got into petty espionage work, and from that into the little group which became the nucleus of the N.S.D.A.P.—the nazi party. The power of his voice, the magnetism of his personality when aroused by a crowd, won him followers by the dozen, the hundred, and finally the million. He was not merely a demagogue ranting denunciations for the sake of personal power; no, as many learned to their

Caricature of Hitler widely distributed by the French underground during the German occupation. The caption reads: "There can be no mistake; that's a pretty beast." The word "vache" has two meanings: "cow" and "beast"





"You Did All That!" Cartoon by Burck which appeared in the Chicago Times on May 3, 1945

amazement, the man actually believed the fanaticism which he preached—and that was what made him dangerous to Germany and to the world. His personal frustration accentuated in him the tragedy of Germany's frustration, and made him and the German people feel more deeply that he represented and personified them all.

After the failure of his first attempt at a military coup in 1923 he was jailed. Thus he had the opportunity to write that most vicious and most significant book of the early 20th century—Mein Kampf. In it he expounded his philosophy and his purpose (Mein Kampf, translated by Ralph Manheim, Houghton Mifflin, 1943):

Therefore, I saw my own task especially in extracting those nuclear ideas from the extensive and unshaped substance of a general world view and remolding them into more or less dogmatic forms which in their clear delimitation are adapted for holding solidly together those men who swear allegiance to them.

He felt the "magic force of the spoken word alone," and held that propaganda must adapt itself to the lowest intellectual level of the listeners. He justified his own fanaticism:

Only a storm of hot passion can turn the destinies of peoples, and he alone can arouse passion who bears it within himself. It alone gives its chosen one the words which like hammer blows can open the gates to the heart of a people.

And so, with passion, and appealing to the emotions, he denounced Jews ("... by defending myself against the Jew, I am fighting for the work of the Lord"), he condemned the treaty of Versailles, he poured contempt on democracy and parliaments, he raised hate and intolerance to a pinnacle ("... the most cruel weapons were humane if they brought about a quicker victory." He called for a

national rejuvenation; he pleaded for the individual to sacrifice himself for the sake of the community; he urged that only through the leadership of one man—and he that man—could the people realize themselves; he apotheosized the state and the Germanic "race." His leadership of the nazi crusade brought him bitter denunciation, but it brought also utter adoration, and by Jan. 1933 the combination of appeal to the masses, intrigue with big business and the brute force of the brown shirts, lifted Hitler to the position of chancellor of the German reich. He quickly consolidated his position; he and the nazi party became the dictators of Germany, and the new militarized state began speaking with force in European affairs.

Mussolini was at first his model and his guide, but Hitler soon outshone his master, and was backed by much greater power. His ambitions grew with his success, and each new step became a means by which previous promises could be abandoned. Again and again it was Hitler's personal will which overrode the advice of his officers and ministers and brought about the remilitarization of the Rhineland (1936), the Anschluss with Austria (1938), and the diplomatic coup of Munich (1938). To many Germans he was on a level with God; he was the "Prince of Peace" who knew how to get things for Germany without war. But he knew not the limits of power, and seemingly came to think there were no limits. He permitted, if he did not inspire, the pogroms of Nov. 1938. He forced stricter controls on Czechoslovakia and sent panzer divisions and bombers into Poland. It was he who directed the deal with the U.S.S.R. in 1939, and it was he who decided upon the attack on the U.S.S.R. in June 1941.

By the power of his personality, Hitler held the German people in the hollow of his hand. He used and threw aside the great industrialists and kept behind him a team of divergent and unscrupulous aides like Goering, Goebbels, Hess, von Ribbentrop, et al. He made himself the personification and the fountainhead of German nationalism, of German power.

After the pinnacle of nazi power was reached in 1941, there followed the slow but relentless tightening of the vise. The Germans had conquered vast territory, but they had not conquered the will or the heart of the U.S.S.R., or Norway, or France or the other peoples under thumb. The British stood steadfast, the U.S. girded its strength. By the time the western Allies landed in Normandy in June 1944, Hitler's legions had been repulsed in the U.S.S.R. and in North Africa, and western Europe was seething with discontent. Hitler's personal intervention in military leadership merely made the situation worse. His famous intuition could no longer be trusted. Many of the officials around him saw the handwriting on the wall and felt that if they could remove Der Fuehrer there might be a better chance to salvage Germany. The officers' plot of July 20, 1944, was to blow Hitler to bits with a bomb. But the scheme failed, by narrow margin. There was bloody retribution, as there had been back in 1934 in the great purge. Hitler's leadership was reaffirmed, and this meant that Germany must fight to the bitter end and go down if necessary in cataclysmic destruction; the German fate must be world power or . . .

Götterdämmerung.—In the fall of 1944, the Allied armies converged on Germany from east, south and west. Fanatic leadership could no longer produce enough soldiers or planes or rockets to stem the tide. As the German armies were driven back, the nazi leaders within the besieged country intrigued among themselves. Himmler complained

of Hitler's health and his abnormal way of life, turning night into day and sleeping only two or three hours. By early April 1945, Himmler, Walther Schellenberg (chief of the German intelligence service), Franz Seldte (minister of labour), and Count von Krosigk (minister of finance), were in contact with one another, trying to find a means to put Hitler aside and end the war. Doctors disagreed on Hitler's reported illness with Parkinson's disease, and even Himmler hesitated to take forceful action.

On came the soviets. Hitler was urged to flee to his mountain aerie at Berchtesgaden and direct the struggle from there. But, possibly under the influence of his mistress Eva Braun, he decided to die with her a martyr's death. On April 22 Hitler told a staff conference that the war was lost and that if Berlin fell he would die there. On the same day he had an attack of nervous prostration, and violently blamed everyone for the German tragedy. The British intelligence service worked out, in the next five months, a detailed reconstruction of events, and it appears that Hitler did not leave the reichschancellory after April 22. Periods of calm alternated with spasms of despair and recrimination. With a small group (Josef Goebbels, Martin Bormann, Eva Braun and some of his personal staff) Hitler waited while shells fell around the bunker and the soviets surged toward the heart of Berlin. Perhaps it was then that he wrote what was reported as his political testament-a document dated April 29. The document blamed the war on international Jews, urged Germany to strengthen its resistance and predicted a rebirth of the nazi movement. Himmler and Goering were expelled from office and party for "illegally attempting to seize control of the state." Karl Doenitz was named head of a new cabinet to carry on the war. And here Hitler recorded his choice of suicide rather than capture or surrender.

In the evening of April 29 Hitler married Eva Braun; at the wedding feast the talk was all of suicide. He destroyed his Alsatian dog, and at about 2:30 A.M. of April 30 said goodbye to a score of people in the bunker. Then supposedly the bridal pair retired to death-he by a shot through the mouth, she by poison. Midafternoon of the 30th, some 40 gallons of gasoline were brought; the body of Eva Braun and another body wrapped in a blanket were soaked with gasoline and burned, and the charred bodies were buried there in the garden of the reichschancellory bunker. Presumably the body in the blanket was that of Hitler. Telegrams signed by Goebbels and Bormann, dated May 1, announced that Hitler had died the day before. Escape was well-nigh impossible, and rumour upon rumour of Hitler's appearance in Argentina and elsewhere proved groundless.

Absolute proof might never appear, but the evidence indicated that Adolf Hitler died by suicide a week before the final collapse of the nazi reich which he had built. (See also GERMANY; WORLD WAR II.)

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Hlinka, Andreus

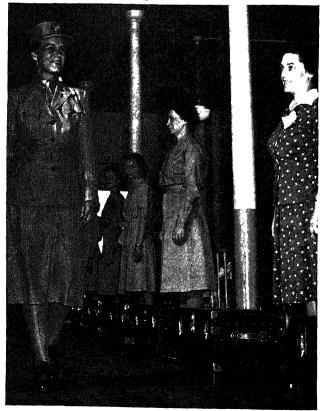
Father Hlinka (1864–1938), Slovak churchman and politician, was ordained a priest of the Roman Catholic church in 1889. He began his political championship of the Slovaks when his countrymen were still subject to

Austro-Hungary; and after the creation of Czechoslovakia he became leader of the Slovak Clerical party in the chamber of deputies, his goal being Slovak autonomy. After some years of collaboration with the Czech Clerical party, Father Hlinka's party went into opposition in 1929. He died in his parish of Rŭzomberok in western Slovakia on Aug. 16, 1938, only a few weeks before the first dismemberment of Czechoslovakia by the Pact of Munich, Sept. 30, 1938.

Hobby, Oveta Culp

Mrs. Hobby (1905-), U.S. director of the Women's Army corps (WAC) during World War II, was born Jan. 19, 1905, in Killeen, Tex. Graduating from the University of Texas law school, she was successively a member of the Texas legislature, assistant city attorney of Houston and a bank director. She also helped codify Texas banking laws and was the author of a text on parliamentary law. In 1931 she married William Pettus Hobby, then governor of Texas, and took an active interest in his newspaper, the Houston Post, becoming executive vicepresident. In 1941 Mrs. Hobby was appointed chief of the women's interests section of the war department's public relations bureau. At the behest of Gen. George C. Marshall, she drafted plans for a women's army, and on May 16, 1942, was sworn in as director of the first force of this kind in United States history, with a rank equivalent to that of a major. Starting with a goal of 12,200 women in uniform, the corps was subsequently authorized to expand to 150,000, and in July 1943 it became an integral part of the army. Awarded the distinguished service medal in Jan. 1945, Mrs. Hobby retired in July of that year with the rank of colonel. She then returned to Houston to resume her position with the Houston Post.

Oveta Culp Hobby, first director of the Women's Army corps, during the opening inspection of barracks at Fort Des Moines, Ia., July 19, 1942



Hockey

See ICE HOCKEY.

Hodge, John Reed

Hodge (1893-), U.S. army officer, was born June 12, 1893, in Golconda, Ill. He studied at Southern Illinois Teachers college, 1912-13 and then at the University of Illinois. In May 1917 he joined the army and was commissioned a second lieutenant the same year. He went overseas with the A.E.F. to France in 1918 and saw action in the St. Mihiel battle. Hodge, who had joined the war department general staff in 1936, was assigned to the 7th army corps in Dec. 1941. Six months later he was promoted to the temporary rank of brigadier general and fought with the 25th infantry as assistant division commander on Guadalcanal. In April 1943 he was advanced to the temporary rank of major general. Given command of the Americal division, he fought on Bougainville. A year later (April 1944), he assumed command of the 24th corps which landed on Leyte in Oct. 1944. Following the conquest of Leyte, Hodge led the 24th corps in the Okinawa fighting. In June 1945, he was promoted again to the temporary grade of lieutenant general and after the surrender of Japan, he was made commander of the U.S. army of occupation in Korea.

His retention of Japanese officials in administrative positions led to sharp protests from Korean officials. Hodge subsequently explained that he was compelled to use the Japanese until he could replace them with trained Korean personnel. His task was also complicated by Korean resentment over the fact that they were not given immediate independence as well as by sharp political cleavage of the people into rightist and leftist political groups.

Hodges, Courtney H.

Hodges (1887-), U.S. army officer, was born Jan. 5, 1887, at Perry, Ga., and joined the army in 1906 as a private. Commissioned second lieutenant, infantry, in 1909, he served with distinction in World War I, being awarded the distinguished service cross and silver star. After the war he served as instructor at West Point, at the infantry school, Ft. Benning, and the air corps tactical school, Langley Field, Va. He became a brigadier general in 1940 and in 1941 was named chief of infantry of the U.S. army with the rank of major general. When he assumed command of the 3rd army in Feb. 1943, he was promoted to the rank of lieutenant general. After he was succeeded by Gen. George S. Patton as head of the 3rd army, he led an army corps during the invasion of France in 1944, and was then given command of the 1st army. Advancing between the British-Canadian forces and Patton's ard army, the 1st army captured the strategic town of Aachen on Oct. 20, 1944, and projected its advance beyond Aachen in the general offensive launched Nov. 16. After recovering from the German surprise counteroffensive of the following month, Hodges led his forces across the Rhine river in March 1945. On April 17 of that year he was appointed a full general. After the German defeat, Hodges was named head of a special war department board to review the strategic reserve program.

Hodža, Milan

Hodža (1878–1944), Czechoslovak statesman, was born at Sucany in a Slovak district of Austria-Hungary. He studied law in Budapest and Kolozsvar, Hungary, and took his Ph.D. at Vienna university. Born into a Slav minority group of the old Austro-Hungarian empire, where the tradition of separation was deep-rooted, Hodžá devoted his lifetime in politics to attempting a compromise among the clashing nationalities of the Danube basin. He was elected to the Hungarian parliament in 1905, became the first minister to Hungary of the newly created Czechoslovak republic in 1918 and was named premier of Czechoslovakia in 1935 by Pres. Thomas G. Masaryk. During the German-Czech tension preceding the Munich pact, Hodza withstood Hitler's pressure and made it clear that Czechoslovakia would not consent to cession of the Sudeten areas. Forsaken by France and England, however, he was forced to accept the German demands on Sept. 21, 1938. The following day he resigned from office. He later retired to Paris and then to London, where he joined the first Czechoslovak State council as vice-president, 1940-41. Hodža died at Clearwater, Fla., U.S.A., June 27, 1944.

Hoffman, Paul Gray

Hoffman (1891-), U.S. industrialist, was born April 26, 1891, in Chicago. He attended the University of Chicago in 1908-09, and went to Los Angeles in 1911, where he worked as an automobile salesman for the Studebaker corporation. After serving in World War I as a lieutenant in the field artillery, he returned to Los Angeles and founded the Paul G. Hoffman company, an automobile distributing agency. He was Studebaker's vicepresident in charge of sales from 1925-31, when he was named president of the Studebaker Sales Corporation of America. During the depression years the big auto plant went into receivership; it was then reorganized, and in 1935 Hoffman was made president. Under his guidance Studebaker not only was put back on a solid financial basis but was competing successfully with the giant motor corporations in Detroit in producing medium-priced cars.

In addition to his position at Studebaker's, Hoffman was elected to the board of trustees of the University of Chicago in 1937, was named a Federal Reserve bank director in 1942, and became a director of United Air Lines and Encyclopædia Britannica, Inc. in 1943. As one of the leaders in the organizing, in Sept. 1942, of the Committee for Economic Development, and as the chairman of the group, he repeatedly warned against inflation and unemployment, urging that wartime restrictions be removed only gradually.

Hogs

The world's hog industry changed relatively little during 1937–46, the increases in North America almost offsetting losses elsewhere. In Europe, the 1931–35 average number was about 80,000,000 head and by 1944 this number was estimated to have declined to 55,000,000 head. Further losses were recorded in 1945 and 1946. The numbers in Asia dropped from a prewar level of about 90,000,000 head to about 65,000,000 head. In South America there was an increase, particularly in Argentina, from about 3,700,000 head to 7,500,000 head. World statistics were incomplete and such estimates were only general approximations. The Combined Food board estimated in early 1946 that world meat production was slightly below the prewar level and 20% below unrestricted requirements.

The number of breeding hogs on United States farms remained at a fairly stable level from 1900 to 1940. The variation was from a low number of 47,800,000 head in 1902 to 64,000,000 head in 1919 following World War I and another peak in 1923 of 69,000,000 head. By 1937,

the number on farms as estimated by the U.S. department of agriculture had dropped to the very low number of 43,083,000 head, lower than in any year after 1888. This was explained by the small corn crop of 1936 and three years of the lowest prices in 25 years preceding 1936. In 1938 began a rapid increase in numbers which lasted to an all-time high record of 83,852,000 head in 1944. In 1945 there was a recession to about 60,000,000 head; there was a small increase to 62,300,000 head in Jan. 1946.

The true story of the growth in U.S. hog production was shown by the size of the annual pig crops of the decade 1937-46. Up to 1933 the total spring and fall pig production had been ranging from 70,000,000 to 84,000,000 head. Then it dropped to less than 60,000,000 head in 1934 and 1935. In 1937, the total was up to 62,519,000 head and increased rapidly to the record numbers of 104,500,000 head in 1942 and 121,706,000 in 1943, which was more than a third above the prewar average. A sharp reduction in numbers occurred in 1944, both in pigs raised and in breeding animals kept. The pig crop declined to about 88,000,000 head. The relative sizes of the spring and fall crops changed from year to year but usually in prewar years the spring crop was about twice the size of the fall output. Of the record crop of 1943, 74,034,000 were raised in the spring and 47,672,000 in the fall.

The prices of U.S. hogs fluctuated in long cycles. A low period occurred in 1932-35, when the price of breeding animals on farms declined to about \$4 per cwt. At Chicago, Ill., the average price of hogs in 1937 was \$8.46 per cwt. and in 1938 and 1939 declined to \$5.62 per cwt. In 1940 the price rise began and continued up to \$14 in early 1942. A top of nearly \$16 was reached in 1943 when in October a ceiling price of \$14.75 per cwt. was fixed by the government and was continued until May 1944. The ceiling on hogs weighing more than 240 lb. was reduced to \$14 in May 1944, and in Oct. 1944, the weight limit was raised to 270 lb. A support price was started at \$9 per cwt. early in 1941 and increased from time to time until it reached a level of \$13.75 in 1943 and was continued until Oct. 1944, when it was reduced to \$2.50 per cwt. The declining pig crop strengthened hog prices in 1946. Hogs sold at the ceiling through 1945 and the price increased to \$14.85 per cwt. when the general meat shortage became apparent in early 1946. During the period of strikes in packing plants in Jan. 1946, prices held close to ceilings. The subsidy of \$1.30 per cwt. to hog slaughterers was continued to June 30. The average price of hogs to wholesale slaughterers was the highest after the brief peak reached in 1919 immediately after World War I.

The number of hogs slaughtered under federal inspection in the U.S. averaged 34,262,000 head per year in the prewar period 1935–39. This total rapidly increased to 50,388,000 head in 1940, declined a little in 1941 and then increased to an all-time record of 69,017,000 head in 1944, after which year there was a decline to about 41,000,000 head in 1945 and a slight increase in 1946. This slaughter of hogs turned out a total of pork and lard amounting to 4,500,000,000 lb. in the prewar period 1935–39 and 9,400,000,000 lb. at the peak in 1944. Farm slaughter of hogs was estimated at 13,300,000 head in 1937 and increased to 13,800,000 head in 1944. Added to the inspected slaughter the total of hogs killed was about 53,900,000 head in 1937 and 96,849,000 head in 1944 at the top of the cycle of production.

The war experience showed several facts of basic im-

portance to the U.S. hog industry. The great increase in numbers to the peak in 1943 was too rapid in view of the feed situation and general meat-packing facilities. The decline in hogs on farms on Jan. 1 amounted to 28% from 1944 to 1945 or a total of 23,000,000 head. This was due partly to shorter feed supplies in 1944, gluts at stockyards and slaughter houses and a fear among producers that a sudden price decline might follow the war's end.

The total production of U.S. meats increased more than 40% during the war years but the civilian supplies rose only about 20%. Supplies were estimated at 56 lb. per capita in 1935-39; they increased to 76.7 lb. in 1944, then declined to 58.9 lb. in 1945, and remained at about the same level in 1946. The military supplies of pork began to be set aside in 1942, when 173,000,000 lb. were taken. This figure increased to 963,000,000 lb. in 1943; 1,382,000,000 lb. in 1944 and 1,718,000,000 lb. in 1945 and then began a rapid decline. The pork supply was so large in 1945 that civilians had the largest amount available at the same time that military needs were the highest. Other exports were not large during this period, amounting to only about 50,000,000 lb. Lend-lease allotments amounted to about 12% of the total supply in 1942, 14.6% in 1943, 11% in 1944 and 4% in 1945. (See also BACON; MEAT.)

						Ta	ы	١.	Numb	er of	Hogs in the l	u s	ì,	19	37	7_,	46			
									(0	n farr	ns January 1)								
1937 1938 1939 1940	:	:	:	:	:	:	:	:	43,083 44,523 50,013 61,113 54,25	5,000 2,000 5,000	1943 1944 1945	:	:	:	:	:	:	:	:	60,377,000 73,736,000 83,852,000 60,660,000 62,300,000
							Ta	ble	II.—Pış	g C <i>roj</i> (Sprin	os in the U.S g and Fall)						•	•	•	42,300,000
1938 1939 1940	:	:	:	:	:	:	:	:	62,519 71,855 86,952 79,840 84,727	,000	1943 1944 1945	:	:	:	:	:	:	:	:	104,559,000 121,706,000 86,753,000 86,714,000 81,424,000
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HOLC (Home Owners' Loan Corporation)

See Housing.

Holland

See NETHERLANDS.

Home Building, Federal

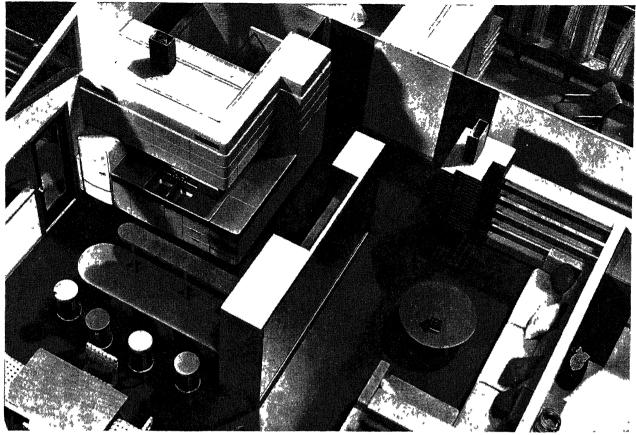
See Housing.

Home Economics

Home economics during the decade 1937-46 grew strikingly both in the scope of the problems dealt with and in the number of individuals and families reached in the United States. In almost every place where home economics was taught, either in elementary schools, high schools or colleges, this expanded program included housing, its selection, arrangement, furnishing and equipment; food for the individual and family group; clothing, selection, care, construction and renovation; home management and consumer buying; family relationships; care and guidance of children; health and home care of the sick; house care and home laundry.

One of the most striking changes in viewpoint was the shifting of emphasis from the individual to the human side of home and family—particularly on the family in its responsibility toward attitudes, abilities and responsibilities in the community, the nation, the world.

The activities of home economics during this decade



The Ingersoll pre-assembled utility unit (upper left) in a low-cost home model exhibited in 1946. A central steel core conceals the heating apparatus as well as wire and plumbing outlets. Built around it are the facilities for kitchen, home laundry and bathroom

was well summarized by figures for the year 1942 when there were on record: 38,000 U.S. college students majoring in home economics in 350 colleges; 27,000 teachers of home economics; 2,600 extension and 2,300 farm security workers serving rural homemakers; 5,000 active dietitians; 450 names appearing in the directory of home economics research and 652 qualified members in the home economics in the business section of the American Home Economics association.

These years showed a greatly expanded use of home economics facilities for all age groups in the community and in schools and kept home economics laboratories busy for evenings, Saturdays and after-school classes in canning, clothing construction and renovation, care and repair of household equipment. Particularly during the war years, thousands of trained home economists gave help either as paid or volunteer helpers in connection with community nutrition, school lunch, Red Cross, Civilian Defense, conservation and rationing programs.

Both in high schools and colleges in this period there was a spread of the participation of the home economics program with the general education program to improve the citizenship training and general education of both men and women.

Men as well as women registered for college, university and adult education courses in nutrition, family relationship and child guidance. At the beginning of 1946, approximately 75% of the high schools in the United States offered vocational home economics courses, and two-thirds of the girls and 5% of boys were reached by this instruction. During these ten years the total number of

home economics students of the federally reimbursed programs grew in many communities. Particularly was this the case during the war years, when much attention was focused on adequate nutrition while there was rationing of food.

In 1936, the membership of the American Home Economics association totalled 10,388. By 1946, this membership totalled 16,637. During these eventful years a large number of students became members of high school and college home economics clubs throughout the United States. In 1936, home economics student clubs numbered 1,372, while at the beginning of 1946 this number had grown to 4,676 with a total membership of 186,013 students.

There was a marked growth in the prestige of this association during the decade, as evidenced by requests for representation at meetings called by other groups both national and international. These requests came from professional, educational, social welfare and business groups. The American Home Economics association was the first women's national organization to plan and carry out nation-wide registration at the beginning of the war (1941).

Consumer Education.—During the decade the American Home Economics association made rapid strides in its consumer education program. The association was very active in getting the American Standards association, which formerly had considered only engineering materials, interested in standards for household products such as refrigerators, bed sheets and blankets. It also helped organize and became the first consumer organization to join the National Consumer-Retailer council, an experiment in consumer-retailer co-operation.

It also brought into being a consumer education series

of informational leaflets. This was a series of newsletters and miscellanea, each of which was a discriminating collection of excerpts from abstracts of current literature relating to consumer problems and reports on newsworthy developments in the field. The leaflets provided a wealth of material for the consumer-buyer as well as valuable teaching material. In the war years they dealt largely with the effects of war on the consumer economy, held up standards of good consumer behaviour under wartime conditions and presented unbiased, constructive criticism of policies relating to civilian goods as evaluated by home economics standards.

These were years in which many members of the association increased their interest and activity in legislation of special interest to consumers.

They testified as consumers, homemakers and professionals before many congressional committees and the United States Food and Drug administration and Federal Trade commission.

The School Lunch bill, passed in June 1946, was one of the important bills actively sponsored by the association.

State Nutritionists.—Under the Social Security act, and encouraged by the children's bureau, health services were extended to mothers and children through grants-in-aid to state health departments. In 1936 there were ten nutritionists employed to act as consultants to physicians, nurses, dentists and other state-employed personnel in extending preventive health services to women before and after birth of their children and to infants, preschool children and children of school age. In 1946 this number had expanded to 49.

Research.—A perusal of yearly summaries of home economics in experiment stations in land-grant institutions in the United States showed that research in home economics increased steadily during the decade and broadened in scope.

Home economics research which up to the beginning of the decade had been confined largely to food and nutrition, expanded during the next ten years to include family economics, child development, home management, textiles and clothing, fatigue in housework, consumer economics, a combination of experimental cookery with household equipment and with home economics education.

Research in human nutrition used human subjects instead of rats and guinea pigs.

These were the years in which the first Ph. D. degree in home economics was conferred. Ph. D. degrees in home economics totalled 25 in this decade.

Foreign Scholarships.—Scholarships were supplied for foreign students who went to the United States to study home economics from China, Korea, Japan, India, New Zealand and South America.

Help was given by eminent home economists for furthering home economics work in several colleges in other countries.

Home Economics in Business.—Many more home economists were found in key business jobs in 1946 than in 1936. The largest number of women trained in home economics, however, naturally went into homes of their own to raise families. But careers for those trained in home economics expanded in number and scope in these ten years.

Bureau of Human Nutrition and Home Economics.— Through a reorganization within the U.S. department of agriculture in 1943, the bureau of home economics which had been a department of the U.S. department of agriculture from 1923 was made a part of the agricultural research administration. At that time its name was changed to the bureau of human nutrition and home economics. The number of research and popular publications prepared by this bureau grew from 35 in 1936 to 58 in 1946. Research supporting these publications expanded in rapid strides. The distribution of popular interpretations of basic research (as distinguished from the technical publications for use of scientists) grew from 1,585,200 to 17,363,400 in 1946.

The research program of the bureau of human nutrition and home economics reflected both current needs of the nation's families and their hopes for the future, with special emphasis on the adjustment of rural families and for basic studies of operating characteristics and performance requirements of home equipment.

The chief of the bureau was present officially and participated actively in the United Nations conferences at Hot Springs, Ark. in 1943, Quebec in 1945 and Copenhagen in 1946. (See also DIETETICS.)

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Home Loan Bank, Federal See Housing.

Home Owners' Loan Corporation

See Housing.

Homma, Masaharu

Homma (1888?–1946), Japanese army officer, was an observer with the British forces in France during World War I. In 1925 he served as Japanese resident officer in India and in 1930 he was appointed military attaché in London, where he was decorated with the military cross of the British empire. In 1939, he commanded Japanese forces at Tientsin, China, when the Japanese army blockaded the foreign concessions there. In Dec. 1941, a few

days after Pearl Harbor, Homma, then a lieutenant general, led the Japanese invasion of the Philippines. Although it had been commonly supposed that Homma had been superseded by Gen. Tomoyuki Yamashita after the campaign bogged down at Bataan and Corregidor, subsequent evidence suggested that Homma held the supreme command throughout the campaign. He also directed "mopping-up" actions of stray American and Philippine forces in the Visayas and Mindanao area. Homma, who arrived in Tokyo to surrender to the U.S. army forces, Sept. 14, 1945, was brought to trial in December. He was formally charged with having been responsible for the "Death March on Bataan," which occurred shortly after the Japanese conquest and in which an estimated 17,200 Filipinos and Americans were killed. The trial opened in Manila, Jan. 3, 1946, with a military commission presiding. Convicted Feb. 11, for ordering the death march and for condoning other atrocities, he was sentenced to be shot. Homma's appeal to the U.S. supreme court was rejected. During the trial, his counsel asserted that Homma had issued instructions for humane treatment of prisoners of war, but that his subordinates, not wholly "motivated by the ideals" of the defendant, were continually changing and therefore, it was impossible to indoctrinate them all with Homma's views. The general was executed by a firing squad at Los Banos, Luzon, April 3.

Honduras

A republic of Central America, Honduras is bounded by Guatemala, El Salvador and Nicaragua. Area: 59,145 sq.mi., with some territory in dispute with Nicaragua. Pop. (1945 census), 1,201,310; by the 1940 census it was 1,107,859 and an official estimate in 1943 was 1,173,032. The capital is Tegucigalpa, the only Latin American capital without a railroad, with a pop. (1945) of 55,715 (by 1940 census, 42,-223). Other cities include San Pedro Sula (22,116 in 1945), La Ceiba (12,185 in 1945) and Tela (8,969 in 1940). The national population was estimated to include 86.4% mestizos, 9.54% Indians and 4.06% white, Negroes and orientals. During the decade 1937-46, the republic continued to have a unitary government with an elected president, commonly characterized currently as a dictator, a directly elected unicameral legislature of 45 members, and a judiciary headed by a supreme court of five members appointed by the congress.

Carías' Iron Rule.—The rule of Pres. Tiburcio Carías Andino was fully consolidated by 1937 (he had been president since 1933) and continued throughout the succeeding decade, although he was faced at various times with threats of revolution, occasionally as a reflection of disturbed conditions elsewhere in Central America. There was a minor revolutionary uprising in outlying districts in Feb. 1937, but it was quickly suppressed by government use of aeroplanes. An underlying cause of the attempted revolution was the serious economic difficulties occasioned by the abandonment of many banana plantations on the Caribbean side of Honduras because of inroads of the "Panama blight," a fungous disease that affected the soil and destroyed the plants.

The most dramatic development of 1937 was the socalled "postage-stamp war" with Nicaragua. The latter republic in Aug. 1937 issued a series of map postage stamps showing several thousand sq.mi. of land commonly credited to and officially claimed by Honduras as "territory in litigation." The development was a phase of the longstanding boundary controversy between the two countries. An acrimonious diplomatic correspondence ensued, followed by a severance of relations and the threat of border



Fliers of Honduras patrolled the republic's Atlantic coast line daily during the height of the German submarine menace, in co-operation with the U.S. antisubmarine forces

hostilities. Costa Rica, Venezuela and the United States offered mediation and on Dec. 10, 1937, the two disputants agreed to accept arbitration. Subsequent negotiation of an adjustment continued through several years, for the most part peacefully except that friction arose in Dec. 1938 when Nicaragua accused Honduras of importing arms in violation of the mediation agreement.

Conditions remained superficially calm in 1938 and 1939, although in some respects Carías maintained only a precarious control, relying especially on his prompt payment of army salaries and his cultivation of the small but efficient air force. Minor disorders occurred in April 1938. The economic situation during both years was difficult, although banana production tended to increase in 1939. In that same year, attention was given to the proposed large-scale production of hemp, a product previously produced only experimentally. The congress in 1939 repealed a law of 1937 creating a differential customs tariff for certain countries, and, at the same time, imposed a 50% duty on the products of some countries, principally those of Japan. On Dec. 18, 1939, the congress voted to extend the term of Pres. Carías to Jan. 1, 1949; the constitution adopted in 1936 had extended the president's term to Jan. 1, 1943.

Honduras in 1940 cast in its lot strongly with the program of western hemisphere solidarity which was then crystallizing. The government took steps to combat fifthcolumn activities and established compulsory military service in Aug. 1940. In March of the same year the congress adopted a new civil code to replace that of 1898. Continued improvement was apparent over the depressed economic conditions of the immediately preceding years. A significant agricultural development was the beginning of experimental rubber cultivation along the Caribbean coast, where 50,000 trees were planted and land was cleared for an additional 150,000 trees. This program was in line with the policy of the United Fruit company, chief foreign investor in Honduran agriculture, to diversify its interests in the face of the banana diseases which had seriously harmed that industry.

Honduras was politically quiet throughout 1941 in spite of rumours of revolutionary plots which circulated from

time to time. The government maintained close co-operation with the United States; in line with such a policy, it put under strict control the export of a variety of strategic materials to non-American countries, taking the action by decree on June 10, 1941. Early in the same year the German charge d'affaires was expelled for propaganda and other activities, and by Sept. 1941 all relations with Germany and Italy were severed.

Following the attack on Pearl Harbor, the congress, on Dec. 8, unanimously voted to declare war on Japan and four days later took the same action against Germany and Italy. Economic conditions were on the whole not good

during 1941.

War's Ill Effects.—Co-operation with the hemisphere defense program continued actively in 1942 in line with the policy adopted the previous year. The government widened the conscript-age limits (to 18 to 32 years for active service and 32 to 45 for the reserves) to increase the army's strength, purchased war materials and increased its defense budget. Axis-owned property was taken over, and control over the movement of United States currency was established. The president was authorized to borrow up to \$15,000,000 for defense and civil emergency needs, and a national bank was established to facilitate financial operations. Honduran economy was hard hit by a serious drop in banana exports; bananas had normally furnished about 65% of Honduran exports, and the wartime decision that available shipping to and from the United States had to be diverted to more essential needs affected Honduras more than any other Central American country. The Honduran government set in operation a policy of price control and conservation, although it was reported after some months of operation to be not too effective. In order to alleviate the unemployment situation in the banana areas, the government began a program of construction work on highways; the work employed approximately 1,000 men and at first emphasized completion of a road link to connect Tegucigalpa with the inter-American highway circling the Gulf of Fonseca through a small portion of Honduran territory.

Banana exports of Honduras fell off to about onefourth of normal output in 1943, with resulting unemployment and financial shortages to the government. In the latter part of the year, six vessels were added to the banana fleet, with some improvement of conditions. The United Fruit company intensified its diversification program for the north coast by expanding its planting of abacá as a hemp substitute; the program had been begun ,by a contract on Jan. 3, 1942, by which the fruit company agreed to plant from 7,000 to 30,000 ac. of abacá and to supply the fibre to the government. The same company established an agricultural school to study that and other production problems. One firm, producing dehydrated banana products, increased its output to full capacity in 1943. To ease unemployment to some extent, the government continued work on the inter-American highway project and other strategic roads; one of the most significant of these was the beginning of active work in 1943 on a highway link around Lake Yojoa in central Honduras, to remove the only important gap blocking highway access from Tegucigalpa to the north coast. A United States financial mission went to Honduras in June 1943 to aid in solution of fiscal problems; the government on March 18, 1943, authorized the importation and use of \$1,500,000 in United States currency.

The highly disturbed political situation in Central

America in 1944 had its repercussions, although it did not lead to revolution, in Honduras. In late May 1944, the government declared a state of siege (martial law) because of the revolution in neighbouring El Salvador. After the resignation, under pressure, of Pres. Jorge Ubico in Guatemala at the beginning of July, disorders occurred in Honduras, with the press reporting at one time that the president had resigned. The government managed to suppress the outbreaks that occurred, although for some weeks the situation continued to be extremely tense. Roving bands of oppositionists were again reported active in Oct. 1944 and sporadic guerrilla fighting took place throughout the rest of the year. Observers credited Carías' continued hold on power, in the face of successful revolutionary movements in neighbouring Guatemala and El Salvador, to the disorganization of his political opposition and to manoeuvring for leadership among the various groups opposed to

Honduras in Jan. 1944 signed the United Nations Relief and Rehabilitation administration agreement, and was later in the year visited by an U.N.R.R.A. mission which arranged for contributions. The first minister from China presented his credentials in Feb. 1944. Some agitation occurred during the year in favour of a break in diplomatic relations with the Franco government in Spain, but no concrete developments followed. A health and sanitation agreement, previously negotiated with a subordinate agency of the Office of Inter-American Affairs in the United States, was in April extended into 1947; in Nov. 1944 ground was broken for a new tuberculosis hospital to which the United States contributed half the cost of \$212,-500. Because of the need for agricultural training, the Pan American agricultural school at Zamorano was opened in October, before the original date planned; the United Fruit company granted \$500,000 in further backing of the institution. Inflationary trends continued in 1944, and Honduras suffered some scarcities of foodstuffs, manufactured items and gasoline. The government continued its road construction program as a means of relieving unemployment; the last steel bridge necessary on the Honduran section of the inter-American highway was completed during the year.

Only minor disturbances characterized Honduras in 1945. A small-scale attempt at revolt occurred in April, when relatively insignificant bands composed of political exiles made an invasion from Guatemala; skirmishes also occurred in the Copán area in the northwest. By the end of the same month the government reported that the revolt had been crushed. It was reported in Dec. 1945 that Pres. Carías had by decree freed the remaining political and military prisoners in Honduran jails as a pre-Christmas gesture. During a session of the congress in the early months of the year, a series of war emergency measures for World War II was approved, chief of which was one expropriating axis assets. War censorship was declared ended Sept. 12, 1945, and the state of siege declared early in the course of the war was lifted by congressional action Dec. 18. The United States disclosed in October that lend-lease military goods sent to Honduras during World War II amounted in value to \$313,000. The government established diplomatic relations with the U.S.S.R. late in March 1945.

In July 1945 the United Nations charter was approved by Pres. Carías and the congress took similar action in its December session. Honduras signed the Bretton Woods monetary pact on Dec. 28, 1945.

Economic Improvement.—Both agriculture and mining (the latter of which had been almost entirely suspended in

	1	938	1	941	1	945
item	Value (000's ommitted)	Amount or number 1 Lempira =49c*	Value (000's omitted)	Amount or number 1 Lempira = 50c*	Value (000's omitted)	Amount or number 1 Lempira = 49c*
Finance		. 20mpire 476		r tempira — 300		i Lempira = 49c
Government revenues Government expenditures	\$5,180†(£1,060) \$5,681†(£1,162) \$10,163(£2,079)		\$5,513‡§(£1,439) \$5,513‡§(£1,439) \$8,718‡(£2,276)			
Transportation Railroads		903 mi. 488 mi.		816 mi.‡ 511 mi.‡		
Communication Telephones Telegraph lines Radio sets				1,943 4,550 mi. 16,000		2,159 4,530 mi.
Minerals Silver		3,335,070 oz. 21,879 oz.		10,000		•••
Crops Corn						3,286,523 tons 2,083,347 " 109,266 "
Livestock Cattle						702,483 258,004 153,674
Exports—Total	\$9,674¶9(£2,181) \$6,122¶9(£1,380) \$1,642¶9(£370) \$762¶9(£172)	12,537,487 bunches 4,387,234 oz.¶♀ 23,548 oz.¶♀	\$10,118¶(£2,509) \$6,702¶(£1,662) \$1,312¶(£325) \$966¶(£240)	13,436,935 bunches¶ 3,748,659 oz.¶ 29,252 oz.¶	\$12,133¶(£3,011) \$6,451¶(£1,601) \$1,116¶(£277) \$610¶(£151)	12,906,716 bunches¶ 2,478,915 oz.¶ 17,746 oz.¶
Imports—Total			\$10,255¶(£2,543) \$883¶(£219) \$574¶(£142) \$554¶(£137)	16,825 tons¶ 100,045 tons¶ 1,032 tons¶	\$15,197¶(£3,771) \$298¶(£74) \$455¶(£113) \$1,785¶(£443)	5,441 tons¶ 64,437 ,, ¶ 1,159 ,, ¶
Defense Standing army personnel Reserves	\$1,078(£220)	2,000	\$1,050‡(£274)	2,325‡ 2,600‡		
Education Elementary schools Enrolment Secondary schools Enrolment				1,000 35,000 95 3,000		
*British value expressed in U.S. cur †11 months ‡1940	rency.	\$Budget estimate. 1944 "Year ending June 30.	91 93 9 8 8 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	es 2 normal schools.		

1942) improved significantly in 1945. Increased shipping, especially in the latter months of the year, brought the banana industry back toward normal. Severe food shortages, notably of sugar, were reported in August, however. The abacá industry was adversely affected by a severe drought during 1945. Rubber production continued on a small scale, although its future was uncertain. The Institute of Inter-American Affairs, a subordinate agency of the Office of Inter-American Affairs, terminated its food supply program in Honduras on June 30 and turned over to the Honduran government its food production and demonstration units. A severe hurricane on the agriculturally important north coast in October resulted in damage estimated at from \$10,000,000 to \$15,000,000. The congress on March 8, 1945, approved the application of a Honduran company for a domestic air line contract. Transportes Aéreos Centroamericanos (Taca) expanded its Honduran air services in 1945, making that country one of the best served by local air lines of all Latin American states. The government's wartime road construction program was virtually brought to a close in 1945 and it was estimated that some of the interior highway links had reduced trucking rates by more than one-third.

The government early in 1946 authorized the importation of an additional \$3,000,000 in United States subsidiary silver coinage. The congress on Jan. 1, 1946, took final steps to remove wartime restrictions on civilian freedom of action but at the end of June a "wave of terror" was reported directed by authorities against newspaper men and students. General economic conditions tended to improve in 1946 although inflation continued to be a serious problem.

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(R. H. FN.)

Honduras, British

See British Honduras.

Honey

See BEEKEEPING.

Hong Kong

A British crown colony, Hong Kong is situated off the southeast coast of China at the mouth of the Canton river between latitude 22° 11′ and 22° 18′ N. and longitude 114° 7′ and 114° 16′ E. Area: about 391 sq.mi. Capital, Victoria: population (1940) 428,616. The estimated population of Hong Kong colony was: 1937 1,006,982; 1938 1,028,619; 1939 1,050,256; 1940 1,071,893.

The total for 1940 subdivided as follows into non-Chinese and Chinese civil population:

	Non-Chinese	Chinese
Island of Hong Kong	 9,920	456,450
Kowloon peninsula		379,816
New territories	 . 524	111,502
Maritime	 . 1,372	100,000
	24.125	1.047.768

To the grand total of 1,071,893 some 750,000 refugees must be added.

Governors: Sir Geoffrey Northcote (June 24, 1937–June 30, 1940); Lieut. General E. F. Norton (June 30, 1940–July 10, 1941); Sir Mark Young (July 10, 1941–Dec. 25, 1941); Lieut. General Rensuka Isogai (Dec. 25, 1941–Aug. 30, 1945) (Japanese governor); Rear-Admiral Sir C. Harcourt (head of military administration) (Sept. 9, 1945–May 1, 1946); Sir Mark Young (after May 1, 1946).

Although not directly involved in the fighting in the far east until the declaration of war on Japan by Great Britain and the United States in 1941, Hong Kong made some contribution toward China's resistance in the early years of the Sino-Japanese war. That its status as a free

port was of considerable advantage to China at the time when the China coast was blockaded and traffic by the Burma Road suspended was indicated by the fact that the value of imports to China via Hong Kong rose from 2-3% of China's total trade in 1936-39 to more than 7% in 1940.

Hong Kong had always been a field of free immigration for the Chinese, and by 1941 the influx of refugees was estimated at 750,000, or more than half the existing population. Housing facilities were stretched beyond their capacity, and this army of refugees added to the already complex social and health problems.

On June 30, 1941, his majesty's government ordered the evacuation of British women and children to Manila, and on July 27 Japanese troops took up stations on the land frontiers, thereby blockading the colony by land. On Dec. 10, the Japanese launched a heavy attack on the frontier, which was followed on Dec. 14 by an ultimatum to the garrison to surrender. This was rejected by the governor. The colony was then subjected to continuous artillery bombardment and air raids. Military and civilian casualties were heavy; important water reservoirs were lost to the Japanese, and water mains were destroyed by bombing. On Dec. 25 Hong Kong surrendered.

Under Japanese rule, health and sanitary conditions deteriorated, and some 16,000 Chinese tenements were rendered uninhabitable. When the British returned on Aug. 30, 1945, they found appalling sanitary conditions and transport and public utilities virtually nonexistent.

The formal Japanese surrender of Hong Kong by Major General Umekichi Okada to Rear Admiral Harcourt took place on Sept. 10, 1945, and for the first months after liberation the colony was administered by the British navy and civil affairs service jointly. Admiral Harcourt became commander in chief, Hong Kong. British military administration was terminated on May 1, 1946, and Sir Mark Young reassumed the governorship.

The colonial secretary announced on May 1, 1946, that the British government aimed at revising the constitution of Hong Kong on a more liberal basis, and that the governor had been instructed to examine this question in consultation with representatives of all sections of the community. In addition to this task the administration was faced in the summer of 1946 with several grave economic and social problems. Price control was difficult to enforce, the Hong Kong dollar became inflated, and the cost of living

item Exchange rate	Hong Kong: Statistical Data, 1938 Value (000's omitted)	Amount or number 1 Hong Kong dollar == 1s.3d.(30.4 U.S. cents)
Finance Government revenues Government expenditu National debt Minerals	res £2,316*(\$11,323)	,
Silver	• • • • •	111,070 oz. 121,293 tons
Cattle		3,573
Fish (fresh and salted) Exports—Total Food and provisions Oils and fats Textiles Imports—Total Food and provisions Piece goods and textil Oils and fats Education Primary schools (govern	£31,890 (\$155,910) £7,519 (\$36,759) £4,814 (\$23,537) £3,478 (\$17,004) £38,510 (\$188,276) £9,497 (\$46,429) £4,873 (\$24,315) £4,873 (\$23,824)	26,000 tons
Students	• • • •	1,969† - 26† 11,032†
University of Hong Kong *In 1941: revenues: £3 debt: £705 (\$2,841).	g students 1,464 (\$13,965); expenditures: £3,6 †1937.	441† 99 (\$14,913); national

was high. Consequently labour difficulties increased rapidly. In spite of this, the colony had an outward appearance of prosperity and Chinese, both wealthy and poor, immigrated in increasing numbers, adding to the already impossible housing situation.

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Hoover, Herbert Clark

), U.S. statesman and gist presi-Hoover (1874dent of the United States, was born Aug. 10, 1874, in West Branch, Ia. He studied geology and engineering at Stanford university, Calif., graduating in 1895. Working as an engineer and technical expert, he took assignments in the western United States and later in Australia and China. After the outbreak of World War I, he organized the Commission for Relief in Belgium and upon the entry of the United States into the war in 1917, he was appointed U.S. food administrator by President Woodrow Wilson. Hoover became chairman after the Armistice of the American Relief administration, which distributed food to countries suffering from shortages caused by the war. In 1920, he entered President Warren Harding's cabinet as secretary of commerce. In 1928, as Republican nominee for president, he defeated the Democratic candidate, Gov. Alfred E. Smith. He was renominated for the presidency in 1932, but was defeated by Franklin D. Roosevelt.

During World War II, the former president re-emerged on the public scene and in Sept. 1943 he obliquely criticized the Allied thesis of "unconditional surrender," expressing his belief that an Allied statement of terms for a "provisional peace" would end the conflict more quickly. After conclusion of the United-Nations conference in San Francisco, Calif., Hoover said that he believed the senate should ratify the U.N. charter, but stipulated that the U.S. delegate to the security council should "in some way be responsible to congress before our country is committed to war."

On March 5, 1946, it was disclosed that Hoover, at President Truman's request, had agreed to investigate food conditions in Europe. Subsequently appointed "honorary" chairman of the president's Famine Emergency committee, Hoover toured the greater part of Europe and the far east. On returning to the United States, he reported on the results of his mission on May 13, 1946, declaring that the world grain shortage of 3,600,000 tons could be alleviated by better co-operation from Britain and the soviet union plus more vigorous conservation measures in grain surplus countries.

Hopkins, Harry Lloyd

Hopkins (1890–1946), U.S. politician, was born Aug. 17, 1890, in Sioux City, Ia. He was graduated from Grinnell college (Iowa) in 1912 and then went to New York, where he engaged in social service work. He was called to Albany in 1931 by Franklin D. Roosevelt, then governor, to take the post of executive director of the New York state temporary relief organization. When Roosevelt became president, he called Hopkins to Washington in 1933 to take over the post of federal emergency relief administrator. Convinced that U.S. people preferred work to a dole, Hopkins helped meet the unemployment problem by organizing and directing the Civil Works administration, the Federal Surplus Relief corporation and the

Works Progress administration. In the next five years, during which Hopkins expended some \$10,000,000,000 for relief, he was the target of both high praise and violent criticism.

By 1938 he had become a close adviser and personal friend of President Roosevelt, and the latter named him secretary of commerce in that year. Two years later, ill-health forced him to resign. In Jan. 1941, however, Hopkins went to London as the president's personal envoy. On March 27 of that year, he was named lend-lease coordinator and journeyed to both London and Moscow to confer with high government officials on the U.S. aid program. He was chairman of the Anglo-American Munitions Assignments board (1943) and attended the principal war conferences at Washington, Casablanca, Quebec, Cairo, Tehran and Yalta.

He also was named to a special committee to study manpower problems.

After the death of Roosevelt in April 1945, Hopkins remained to advise and assist President Truman. His last diplomatic mission was to Moscow, where (Mav-June 1945), he laid the plans for the Potsdam conference of the Big Three. His influence with Premier Stalin later smoothed over a snag at the San Francisco conference, where the United Nations were deadlocked over the issue of freedom of discussion in the security council. Hopkins resigned as adviser to Pres. Truman on July 3, 1945, because of his failing health. Hopkins accepted the chairmanship of the Woman's Cloak and Suit Industry in September, succeeding former Mayor James J. Walker. He died in New York city, Jan. 29, 1946.

Hops

The U.S. production of hops increased from 1938-44 except for the poor year 1942. The acreage did not increase much from 1937-44, when it was still below the previous high point of 39,100 ac. harvested in 1938. In 1945, the acreage was expanded to 41,000 ac. on which the record high yield of 1,379 lb. per acre brought the alltime record crop of 56,700,000 lb. The crop of 1946 was 53,171,000 lb. A low price of 9.8 cents per lb. for the big crop of 1935 led growers to restrict picking in 1936, reducing the average yield to only 816 lb. per ac. The price rose to 27 cents per lb. in 1936, and in 1937 a crop of 43,-900,000 lb. was harvested. Bad weather checked the increasing production in 1942; labour shortage was also a retarding factor. Prices advanced steadily through the decade to a top of 64.9 cents per lb. for the crop of 1944. The total value of the hop crop advanced steadily after 1938, when it was \$6,346,000, to \$30,967,000 in 1944.

The consumption of hops by breweries made only a small increase during the decade, from 36,608,000 lb. in 1936 to 37,240,000 lb. in 1944. The excess production was mostly absorbed by heavier exports, which averaged about 8,000,000 lb. from 1939-44. Only very small imports were made after 1940. The hop industry continued to be confined to the Pacific Coast, and production in the old hopgrowing regions of the east were not revived. Hop growing in England and Wales was not restricted during World War II from the 26,300,000 lb. of 1937 and continued at around 27,000,000 lb. The hop production of Europe was est. at 62,000,000 lb. in 1938 but declined as the war pro-

U.S. Hop Production by Leading States, 1937-46 (In millions of pounds)

gressed. Germany, Poland, France, Czechoslovakia and the Balkans, the principal producers, all had a declining output which had only begun to recover in 1946. The destruction of much of the brewing industry in Germany destroyed the market for hops.

(J. C. Ms.)

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Hore-Belisha, Leslie

Hore-Belisha (1895-), British statesman, was educated at Clifton college, at Paris, Heidelberg, and at St. John's college, Oxford. During World War I he served in the army, reaching the rank of major. He represented the Devonport division of Plymouth in Commons from 1923 as a Liberal; after 1931, he held the seat as a Liberal-Nationalist. Holding office first as parliamentary secretary to the board of trade in 1931 and then financial secretary to the treasury in 1932, he was minister of transport from 1934-37. On Baldwin's resignation in May 1937, Hore-Belisha became secretary of state for war. He resigned from this position in Jan. 1940 ostensibly because of friction with the general staff, which frowned at his attempt to democratize the army. As a member of parliament during World War II, he was a vigorous spokesman for liberal and internationalist policies. He proposed a plan for common British-U.S. citizenship, criticized the Churchill administration for compromising with undemocratic groups, and urged the opening of an early second front against Germany. He resigned as Liberal-Nationalist party chairman in March 1940 and as a member of that party in Feb. 1942. In July 1945 he was defeated in the parliamentary election.

Hormones

See BIOCHEMISTRY; CANCER; CHEMISTRY; CHEMO-THERAPY; DENTISTRY; ENDOCRINOLOGY; ENTOMOLOGY; MEDICINE; PHYSIOLOGY; PSYCHOLOGY; SURGERY; UROL-OGY.

Horse Racing

That horse racing should have shared in the general expansion and inflationary movement that marked the decade 1937-46, affecting the entire American scheme of life, was to have been expected, but few of the turf's most optimistic promoters could have foreseen the proportions which this process attained. Perhaps the most condensed and effective evidence was afforded in the statistics of the decade:

Year	Horses raced	Days of racing	No. Races run	Amt. of Money distributed
1937	11,515	2,140	16,250	\$14,363,562
1938	12,185	2.140	16,243	14,946,609
1939	12,804	2,199	16,967	15,312,839
1940	13,257	2.096	16,401	15,911,167
1941	13,683	2.162	16.912	17,987,225
1942	12,614	2.228	17.539	18,136,118
1943	11,258	2.052	16,094	18,555,680
1944	12,959	2.396	19,228	29,159,099
1945	14,307	2,480	19.587	32,300,060
1946 (est.)	15.642	3.020	23,941	49.289.144

Prosperity.—This growth was unprecedented in turf history, through a period when many deterrents interfered from time to time. It was natural that the United States' entrance into World War II in 1941 should have been followed by much doubt and anxiety regarding the status and possible complete suspension of racing. Suspension, however, did not materialize, although governmental moves in that direction were not wanting and at one stage as-



Seabiscuit and War Admiral in their match race Nov. 1, 1938, at Pimlico track, outside Baltimore, which finished with Seabiscuit ahead by six lengths

sumed an attitude so hostile that many horsemen endeavoured to prepare for the worst. That it did not eventuate was probably due to two causes: (1) the fact that the immense taxation revenue derived by many states from the sport would have been wiped out, and (2) the accompanying fact that the suppression of racing, bound to be intensely unpopular under any circumstances, could not logically be carried out unless all other major sports were also suspended. The partial "blackouts" that were enforced in various states proved, in the last analysis, futile, as did the arguments advanced in their support.

In California, the meetings at Santa Anita were discontinued through the three seasons of 1942, 1943 and 1944; when resumed in 1945, their success eclipsed all previous records and came to a climax when 80,200 persons paid admission to see the running of the \$100,000-added Santa Anita Handicap on March 9, 1946, this being the largest number ever known authentically to have attended a horse race in the U.S.A.

Through this period the Kentucky Derby, although governmental efforts were made to force its calling off, was renewed every season with conspicuous success; its money value of \$75,000-added was steadily maintained, and in 1946 was raised to \$100,000. The natural desire of the public for a means of diversion from the intense national strain was irresistible, heightened as it was by the vast outflow of money which the war precipitated. By 1944 the total volume of race-track betting in North America had

risen above the billion mark, registering \$1,209,973,122. In 1945, it increased to \$1,388,230,192, and a single commonwealth, New York state, alone had derived over \$500,000. ooo in taxation revenue from this source. Wagering on the 1946 Kentucky Derby totalled \$1,202,474; this was the first time in world turf history that \$1,000,000 or more had been bet upon a single race. No single day's program had yet produced a "handle" (the vernacular term for the amount passing through the totalisator) of \$5,000,000, but \$4,000, 000 was exceeded on several occasions at New York and California tracks. The combined revenues of the managements from the "take" (percentage of the "handle" allowed them by law) averaged about 121/2% for some 20 different states with legalized betting. The large gate admissions in turn permitted expenditures that would have seemed astronomical a decade before. Stakes with \$100,000 added money no longer excited any commotion, whereas in 1937 the Santa Anita Handicap was the sole event of that class, those carrying \$50,000 had become almost commonplace. At Belmont Park in 1946 an overnight purse worth \$25,000 was programmed; this was precisely the same amount with which, in 1937, the principal annual stake event, the classic Belmont for three-year-olds, had been endowed. Almost 50% as much money was distributed to stake winners alone in 1946 as had been awarded to all classes of horses, in both purses and stakes, ten years before-approximately \$6,000,000. But the bulk of the money, as always, went to the rank and file of the overnight "platers."

Such money-winning possibilities entirely changed the former custom of scaling the capacities of thoroughbreds according to the amount of their earnings. By winning the Santa Anita Handicap of 1946, War Knight netted his owner \$101,220, whereas any horse earning that much through his entire career formerly ranked among the élite of all time; many of the best animals of the 19th century never compiled totals of as much as \$50,000—and some less than \$25,000. In 1946, the leading money-winner, the King Ranch's three-year-old Assault, amassed a net total of \$424,195, to displace the long-standing record of \$308,275 established by William Woodward's Gallant Fox in 1930. The following table gives the leading money-winners of the decade:

Year	Horse and owner	Races won	Money won
1937	Seabiscuit, b c, 4 (C. S. Howard)	 11	\$168.580
1938	Stagehand, b c, 3 (Maxwell Howard)	 8	189,710
1939	Challedon, b c, 3 (W. L. Brann)	 9	184,535
1940	Bimelech, br c, 3 (E. R. Bradley)	 4	110,005
1941	Whirlaway, ch c, 3 (Calumet Farm)	 13	272,386
1942	Shut Out, ch c, 3 (Greentree Stable)	 8	238.872
1943	Count Fleet, b c, 3 (Mrs. John Hertz)	 6	174.055
1944	Pavot, br c, 3 (W. M. Jeffords)	 8	179,040
1945	Busher, ch f, 3 (L. B. Mayer)	 10	273,735
1946	Assault, ch c, 3 (King Ranch)	 8	424,195

All records for an individual horse were twice lowered during this period. At the start of the decade, honours were held by Sun Beau at \$376,744, which he earned through the five seasons of 1927-31 inclusive. In 1940, Seabiscuit closed a career of six seasons (1935-40) with a grand total of \$437,730. That same year Whirlaway made his début as a two-year-old, to remain before the public four seasons, during which he amassed \$561,161; he started in 60 races, won 32, ran second in 15 and third in 9. The first horse to reach the half-million mark, Whirlaway's tenure of supremacy looked secure for years to come-but in 1946 was seriously threatened by Stymie, a horse bred, like Assault, at the King Ranch in Texas but weeded out of its racing stable as a two-year-old for only \$1,500 as worthless. Stymie's climb up the ladder, one of the romances of racing, began as a three-year-old and he retired in the fall of 1946 with a credit of \$516,285 and the prospect of making an-

other successful campaign in 1947 which might place him at the top of the roster. Two other money-winning records of importance were established in 1945-46, when L. B. Mayer's three-year-old filly Busher took the title for her sex with a credit of \$334,035, displacing Top Flight and her \$275,900 (established in 1931); the gelding record was placed at \$385,175 by Calumet Farm's Armed, displacing the \$332,250 of Phar Lap noted above.

Calumet Farm (Warren Wright) just missed the millionmark in 1944, when horses bred there earned \$990,612. The previous leading breeder was H. P. Whitney, whose home-bred horses as far back as 1927 had won \$718,144. In 1944, Calumet Farm's racing stable likewise placed to its account \$601,660 in stakes and purses, after having previously captured \$475,091 in 1941, up to which date \$438,849, won by the Rancocas Stable of H. F. Sinclair in 1923 had held the lead. In number of race winners, Hirsch Jacobs overshadowed all other trainers by saddling the largest number in seven of the ten seasons of the 1937-46 decade. His average had been over 100 annually since 1989; in 1936 he established a single-year record of 177.

Jockeys enjoyed similar opportunities and made the most of them. In 1945, Johnny Longden rode the winners of \$981,977. Ted Atkinson, leading race-winning jockey in both 1946 and 1944, earned an income of as high as \$92,000 in 1945; he received a retainer of \$20,000 for first call on his services at a single meeting. Incomes of the leading trainers were not made public, but more than one undoubtedly exceeded the \$100,000 mark.

Winners of Important Stakes-1937-1946

Nemocky Derby									
Year	Winner Owner	Value							
1937	War Admiral S. D. Riddle	\$52,050							
1938	Lawrin Woolford Farm	47,050							
1939	Johnstown William Woodward	46,350							
1940	Gallahadion Mrs. E. V. Mars	60.150							
1941	Whirlaway Calumet Farm								
1942	Shut Out Greentree Stable	64.225							
1943	Count Fleet Mrs. J. D. Hertz	60,725							
1944	Pensive Calumet Farm								
1945	Hoop, Jr F. W. Hooper								
1945	Assault King Ranch	96,400							
1940	Assault	90,400							
	Santa Anıta Handıcap								
1937	Rosemont Foxcatcher Farm	90,700							
1938	Stagehand Maxwell Howard	91,450							
1939	Kayak 2d Chas. S. Howard	91,100							
1940	Seabiscuit Mrs. Chas. S. Howard								
1941	Bay View Mrs. A. Pelleteri	89,360							
1942	*No race								
1943	*No race								
1944	*No race								
1945	Thumbs Up L. B. Mayer	82.925							
1946	War Knight Miss E. V. Hill								
	gs cancelled by government restriction.	,200							

*Meetings cancelled by g	sovernment restriction.
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	The Futurity										
1937	Menow H. P. Headley 5										
1938	Porter's Mite W. E. Boeing 5										
1939	Bimelech E. R. Bradley 5	7,710									
1940	Our Boots Woodvale Farm 6	5,800									
1941	Some Chance Calumet Farm 5	7,900									
1942	Occupation John Marsch 5										
1943	Occupy John Marsch 5										
1944	Payot W. M. Jeffords 5										
1945	Star Pilot Mrs E. N. Graham 5										
1946	First Flight C. V. Whitney										

NOTE:—The Kentucky Derby is America's richest and most famous three-year-old stake and is a dash of 1 ½ mi. run at Churchill Downs, Louisville, Ky. The Santa Anita Handicap is the richest event for horses of all ages and is a dash of 1½ mi. run at Santa Anita Park, Arcadia, Calif. The Futurity is the leading two-year-old stake and is a dash of 6½ furlongs run at Belmont Park, Hempstead, Long Island, N.Y.

Breeding.-The money flooding the race tracks naturally reached the breeding branch of the industry. During the long depression of the 1930s, blood-stock values experienced a disastrous deflation; in 1932, the average price paid publicly for yearlings fell to \$569.95, from a high of \$3,207.53 in 1925. The recovery was slow, but by 1937 the price had climbed back to \$1,675.96. Another decline set in with the outbreak of World War II, and the U.S. entry into hostilities in 1941 caused another severe slump. The 1942 average price was \$637.75, as the governmental threat

of closing all the tracks produced a panic among buyers. When this threat was not carried out, the reaction was immediate. A "bull market" was inaugurated in 1943 with an average of \$1,865.99; this price more than doubled in 1944 at \$3,916.93, soared to \$5,146.37 in 1945 and then to \$6,031 in 1946. The U.S. yearling record of \$75,000 paid in 1928 was not threatened; a high of \$66,000 was registered in 1942, while in the fall of 1946 a sensation was produced when Mrs. Elizabeth N. Graham paid \$50,000 at private sale for the weanling colt, own brother to Busher, by War Admiral-Baby League. The purchase was made in the liquidation of the estate of E. R. Bradley, of Idle Hour Farm, Lexington, Ky., who had died shortly before.

High class stallions and brood mares became virtually unbuvable, while the books of the most successful sires as a rule were filled for seasons in advance. The moneywinning records for the season's premiers left all previous ones far behind. Up to 1937 the record for America was \$422,200, won by the get of Sir Gallahad 3rd in 1930; that for England was \$378,535, won by the get of Blandford in 1934. In 1942, a new figure of \$437,131 was registered by the get of Equipoise, who had been dead four years (Aug. 5, 1938). During 1945 occurred the first instance of the sons and daughters of a single sire reaching the half-million mark, those of War Admiral winning \$591,352. Their achievement was enhanced by the fact that there were only 26 of them performing, War Admiral being a young sire in the early stages of his career. War Admiral was deeply bred in the old-established American blood-lines, being a son of Man o' War and Brush Up, by Sweep. He was bred and owned by Samuel D. Riddle, also owner of War Admiral's sire, the most famous thoroughbred of modern

Shadows.-Along with its prosperity, however, the turf disclosed weaknesses and unfavourable aspects not to be ignored. Many observers considered that racing sooner or later would collapse of its own top-heaviness, as it had previously more than once. In the metropolitan New York area alone there were four major tracks, plus three in New Jersey, while promoters were reported busy at the end of 1946 with plans for still others. Maryland had four major tracks and an extensive chain of minor ones. Chicago had four major and one minor track. Within a relatively small area in Southern California, extending just over the line into Mexico, there were four major tracks. There were three adjacent to Miami, Florida. In Detroit, where there was but a single plant, meetings were extended to great lengths; at Providence, R.I., with two suburban tracks, Narragansett Park and Pascoag, over 150 days of racing were given annually. Numerous similar instances could be cited. Plants known familiarly as "merry-go-rounds" were located in outlying communities such as Wheeling, W. Va.; Akron, Hamilton and Columbus, O., and elsewhere.

The immense growth of race-track betting also gave rise to much criticism, not only from the professional "reform" element, but from many different classes of persons interested in a high standard of public affairs. The tremendous number of women patrons and the strenuous endeavours of managements to attract their patronage produced many protests. Though all state laws governing race-track betting continued to forbid the participation of minors, lax officials winked openly at this prohibition. The truly cancerous growth of potential evil, however, was the nation-wide network of "off-track" and wholly illegitimate betting establishments.

Outcries about the alleged "crookedness" of racing did not, however, apply except to the cheapest and most disreputable meetings. Generally speaking, supervision at the reputable ones was strict, vigilant and effective; the results left little room for criticism.

From the purely sporting standpoint, the 1937–46 decade was memorable for the performances of some of the greatest thoroughbreds ever seen in America. Such horses as Seabiscuit, War Admiral, Challedon, Whirlaway, Alsab, Market Wise, Shut Out, Count Fleet, Busher, Armed, Assault, Stymie, Twilight Tear, Eight Thirty, Stagehand, Lucky Draw, Bimelech, Pavot, Attention, Devil Diver, Fénélon, Bolingbroke, Honeymoon, Gallorette and others left indelible marks upon the records.

Harness Racing.—While the progress of harness racing did not equal that of the thoroughbred, it made great gains during the decade. In both the racing and breeding aspects, it experienced a real renaissance, even though some of these gains were inevitably accompanied by retrogression along other lines. Outstanding features were the virtual "making over" of the racing system to conform closely to the running pattern; the abolition of all time bars in the classification of performers; and the substitution of dash for heat racing to a large extent, together with protracted meetings of the promoter-tax-revenue type.

In 1946 the Hambletonian Stake, trotting equivalent of the Kentucky Derby and after its inception in 1926 the richest harness race in the world, was displaced as such by two dash events with purses of \$50,000 each—both unsatisfactory contests won by horses of inferior class. The great increase in the earning capacities of both trotters and pacers, as with the runners, caused a tremendous inflation in values, especially those of yearlings and two-year-olds. Up to 1937, the highest price ever paid for a yearling trotter at public sale was \$13,500; it rose to \$37,000 in 1944. For a two-year-old (Hoot Mon) \$50,000 was given privately in 1946.

The close of World War II brought a new influx of foreign buyers from various European countries and resulted in the sale to Italy of the stallion Doctor Spencer for \$50,-000, together with the export of a large number of other animals at high prices.

One supremely great trotter dominated the decade—the gray gelding Greyhound, whose record-breaking achievements were without precedent. Among them were the

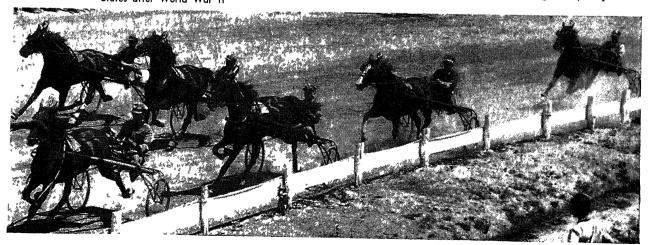
Trotting race at Goshen, N.Y., in the summer of 1944. Public interest in harness racing reached a new high level in the United States after World War II world's record for one mile at 1:55½; for a mile and a half at 3:02½; for two miles at 4:06; for a mile in a race at 1:57½; for a mile over a half-mile track at 1:59¾; and that for a double team at 1:58¼, made to pole with the trotting queen Rosalind 1:56¾ (the latter reduced the mares' record from 1:58¼ in 1938). Greyhound was bred in Kentucky by Henry H. Knight and was owned by E. J. Baker of Illinois, who bought him as a yearling for only \$900. Next to Greyhound, the greatest trotter of the decade was probably the bay colt Titan Hanover, who lowered the mark for two-year-olds from 2:02 to 2:00, and for three-year-olds from 1:58½ to 1:58. He was bred at Hanover Shoe Farms, Hanover, Pa., and sold as a yearling in 1943 for \$3,000 to E. Roland Harriman and Elbridge Gerry, of New York.

In 1941, the record for trotting stallions, which had stood at 1:58½ ever since 1916, was lowered to 1:57½ by the four-year-old Spencer Scott, bred in Kentucky by David M. Look and sold privately as a yearling to C. W. Phellis. On the pacing side the decade was made memorable by the bay colt Billy Direct, bred in Tennessee by H. H. Ridge, of Massachusetts. He first lowered the three-year-old record from 1:59½ to 1.58 in 1937 and then, at four, the world's record, regardless of sex or age, from 1:55¼ to 1:55.

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Racing in Britain.—The ten years covering the period 1937–46 were certainly eventful ones in the history of the turf in Britain, if for no other reason than that racing was kept going, although only on a skeleton scale, during the war years, in spite of shortage of forage and labour, difficulties of transport, the rival claims of the ploughing campaign which sorely depleted the studfarms, and the severe curtailment of both racing and breeding stock. Had racing been allowed to lapse entirely, the breeding industry would have suffered a set-back beyond recovery, and many of the best strains of blood which may well be regarded as a national asset would have been lost in obscurity. A total stoppage occurred from June 19 to Sept. 14, 1940, after which a partial program was carried out on certain courses only, but principally at Newmarket.

During 1942, 1943 and 1944, racing was conducted on a regional basis, being confined to horses trained within a specified area, the only exceptions to this rule being the five classic races and a very few other specially important





Grinning happily, Jockey Warren Mehrtens is shown leaving the winner's circle where Assault stood with his owner, Robert J. Kleberg, after winning the 1946 Kentucky Derby purse of \$96,400 on May 4, 1946

events. An alternative concession was made in the case of the Cambridgeshire and Cesarewitch. As it was not feasible to transport the large number of horses which usually compete, separate races with similar conditions were run in each of the three regions, these being respectively designated the Newmarket, Ascot and Northern Cambridgeshire and Cesarewitch.

From 1940-45 inclusive, the Two Thousand guineas, One Thousand guineas, Derby, Oaks and Ascot gold cup were run at Newmarket, and the St. Leger on various courses other than at Doncaster.

Below are given the winners of the principal events during the decade:

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The Derby

1937 Mrs. G. Butt-Miller's Mid-day Sun (ridden by M. Beary)
1938 Peter Beatty's Bois Roussel (C. Elliott)
1940 Feter Beatty's Bois Roussel (C. Elliott)
1941 Mrs. Macdonald-Buchanan's Owen Tudor (W. Nevett)
1942 Mrs. Macdonald-Buchanan's Owen Tudor (W. Nevett)
1943 Miss Dorothy Pager's Straight Deal (T. Carey)
1944 Lord Rosebery's Ocean Swell (W. Nevett)
1945 Sir Eric Ohlson's Dante (W. Nevett)
1945 Sir Eric Ohlson's Dante (W. Nevett)
1946 J. E. Ferguson's Airborne (T. Lowrey)

The Oaks
1937 Sir Victor Sassoon's Exhibitionnist (S. Donoghue)
1938 Sir Hugo Cunliffe-Owen's Rockfel (H. Wragg)
1939 R. Sitrling Clark's Galdatea II. (R. A. Jones)
1940 Esmond Harmsworth's Godiva (D. Marks)
1941 John A. Dewar's Commotion (H. Wragg)
1942 His Majesty's Sun Charlot (Gordon Richards)
1943 James V. Rank's Why Hurry (C. Elliott)
1944 William Woodward's Hycilla (G. Bridgland)
1945 Lord Derby's Sun Stream (H. Wragg)
1946 Sir Alfred Butt's Steady Aim (H. Wragg)
1947 The St. Leger
1937 Lord Glanely's Chulmleigh (Gordon Richards)
1938 James V. Rank's Scottish Union (B. Carslake)
1940 No race, war being declared in the week preceding the fixture.
1940 The Aga Khan's Turkhan (Gordon Richards)
1941 Lord Portal's Sun Castle (G. Bridgland)
1942 His Majesty's Sun Charlot (Gordon Richards)
1943 Lord Derby's Herringbone (H. Wragg)
1944 The Aga Khan's Turkhan (Gordon Richards)
1945 Squadron-Leader Stanhope Joel's Chamossaire (T. Lowrey)
1945 J. E. Ferguson's Airborne (T. Lowrey)
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The Middle Park Plate (for two-year-olds)

1. V. Rank's Scottish Union (Gordon Richards)

1. A.F. Basser's Hyacinthus (half-blood) (P. Beasley)

1. His Majesty's Sun Charorot (H. Wragg)

1. Lord Rosebery's Ribbon (E. Smith)

1. Miss Dorothy Pager's Orestes (T. Carey)

1. Miss Dorothy Pager's Orestes (T. Carey)

1. The Aga Khan's Saravan (C. Elliott)

1. The Aga Khan's Saravan (C. Elliott)

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1. The Aga Khan's Saravan (C. Elliott)

1. The Middle Owen's Finis (H. Wragg)

1. Wrs. Macdonaid-Buchanan's Owen Tudor (Gordon Richards)

1. A. E. Allnat's Ulijii (Gordon Richards)

1. The Aga Khan's Umiddad (Gordon Richards)

1. The Aga Khan's Umiddad (Gordon Richards)

1. The Aga Khan's Umiddad (Gordon Richards)

1. The Aga Khan's Umiddad (Gordon Richards)

1. The Aga Khan's Umiddad (Gordon Richards)

1. The Cambridgeshire (1 mi. 1 furlong)

1. Major R. B. Glover's Artist's Prince, 6 st. 1.2 lb. (A. Richardson)

1. Jacques Meller's Hellenique, 6 st. 1.2 lb. (A. Richardson)

1. Jacques Meller's Hellenique, 6 st. 1.2 lb. (A. Richardson)

1. A. Abelson's Rue de la Paix, 8 st. 13 lb. (T. Carey)

1. A. Abelson's Rue de la Paix, 8 st. 13 lb. (T. Carey)

1. A. Abelson's Rue de la Paix, 8 st. 13 lb. (T. Carey)

1. A. Abelson's Rue de la Paix, 8 st. 13 lb. (T. Carey)

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1. A. Abelson's Rue de la Paix, 8 st. 13 lb. (T. Carey)

1. A. Straker's Silver Sal, 7 st. 8 lb. (N. Nevett)

1. A. Straker's Silver Sal, 7 st. 8 lb. (D. R. Richards)

1. A. Straker's Sayani, 9 st. 4 lb. (G. Packer)

1. A. Straker's Saya
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As regards individual merit, it was generally considered that Blue Peter, winner of the Two Thousand guineas, Derby and Eclipse stakes of 1939, and favourite for the St. Leger abandoned on the outbreak of war, was a Derby

winner of more than average class; while there was no doubt that Dante was a colt of exceptional brilliance, winning all his six races as a two-year-old, and the Roseberry stakes and Derby at three years, his only defeat being when Court Martial beat him by a neck in a field of 20 for the Two Thousand guineas.

Of other classic winners during the war period, although such racing as was permissible was of inestimable advantage to the breed of the racehorse, the opportunities available were in general scarcely sufficient to allow any one horse to stand out in any very marked degree from his contemporaries. Dante, however, was an exception, and another very notable one was Sun Chariot, who won eight of her nine races, including the One Thousand guineas, Oaks and St. Leger. This filly was bred by the national stud in 1939, and leased to King George for her racing career, as was also Big Game, an unbeaten two-year-old of 1941, and with whom his majesty won the Two Thousand guineas the following season, the royal colours thus being successful in four of the five classic races of 1942.

On the whole, the decade was apparently more remarkable for the production of good fillies than good colts. It may be noted that the above list of ten Oaks winners contains the names of two exceptionally good fillies in addition to Sun Chariot, these being Rockfel and Godiva, each of whom won the One Thousand guineas as well as the Oaks, a feat also accomplished by Exhibitionnist. Others meriting special mention were Garden Path, winner of the Two Thousand guineas of 1944, and the only filly to have done so since Sceptre's victory in 1902; Herringbone, who

The Grand National steeplechase at Liverpool, England, held in April 1946, was the first in 6 years. All but 6 of the 34 entries were thrown at one or another of the treacherous jumps shown below "Lovely Cottage" was the 1946 winner won the One Thousand guineas as well as the St. Leger, Ribbon, winner of the Middle Paik stakes, and second in the One Thousand guineas, Oaks and St. Leger, in which last race she defeated the Derby winner, Straight Deal; and the list would be incomplete without the inclusion of Afterthought, winner of the Jockey Club cup of 1942, over the two-and-a-quarter-mile, and second in the Gold Cup won by Owen Tudor.

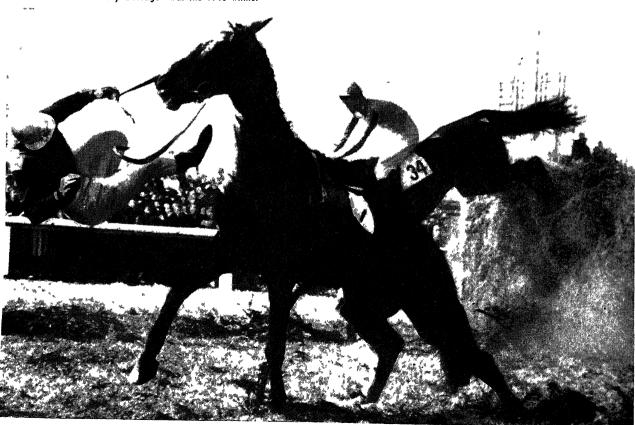
Godiva unfortunately died in the course of her threeyear-old career, and Rockfel also came to an untimely end, succumbing soon after her first foal was weaned.

Wartime privations appeared to affect French horses to a lesser degree than the English, as those sent over to contest the long-distance races of 1946 exhibited staying qualities of a high order, their victories including the Gold Cup and Alexandra stakes at Ascot, and also the cups at both Goodwood and Doncaster.

An outstanding feature during the period was the success of the stock of Lord Derby's Hyperion (himself a winner of the Derby and St. Leger), who in nine seasons up to the end of 1946 had sired 133 individual winners of 308 races in England and Ireland, to the value of £219,327.

These figures were the more remarkable in view of the limited opportunities afforded, as for six of these years racing was drastically reduced, the entire amount of stakemoney in England during the five seasons 1940–44 amounting to only £787,893, whereas in the single year 1938 the sum available for competition was £731,826.

The great achievements of Hyperion as a stallion were best instanced by the record of his offspring in the classic races in the short term of eight years, in which he sired a winner of the Derby, two of the St. Leger, and four of both the One Thousand guineas and Oaks; second three times and third twice in the Derby and also in the Two Thousand guineas; twice second and twice third in the St.



Leger and the same in the Oaks, second once and third three times in the One Thousand guineas.

Fairway, another of Lord Derby's stallions, got three winners of the Two Thousand guineas (Big Game, Kingsway, and Garden Path), and two of the Derby (Straight Deal and Watling Street), between the years 1939 and 1944, besides being paternal grand-sire of Lambert Simnel, Court Martial (both winners of the Two Thousand guineas), and Ocean Swell (Derby).

In the early part of the war (1940-41) the value of bloodstock was almost negligible, but an improvement became manifest the following year, especially as regards the better class stock, and from 1943 onwards prices steadily increased.

Even as early as Dec. 1942, the six-year-old Olein, covered by Hyperion, realized 17,000 guineas at auction, a sum which had only once before been equalled, and never exceeded, for a brood mare, while in 1945 all previous records for animals of their age were broken when a yearling colt (subsequently named Sayajirao), own brother to Dante, by Nearco out of Rosy Legend, was sold for 28,000 guineas, and a colt foal by Hyperion, Blanco, for 7,200 guineas, the previous highest prices having been 15,000 and 5,000 guineas respectively. (F. M. Pr.)

The King George VI stakes (of 50 sovereigns each with £5,000 added) was run for the first time over a two-mile course at Ascot on Oct. 12, 1946, and won by the French three-year-old Souverain owned by F. R. Schmitt (jockey, M. Lollierou), with Bright News, owned by W. W. H. Macdonald (jockey, M. Wing) second and Airborne, owned by J. E. Ferguson (jockey, T. Lowrey) third.

Horses

The iron horses—the gasoline truck and tractor—continued steadily to eliminate the horse as a draught animal during the decade 1937—46. The number of horses in the United States had increased until 1915, and the number of mules reached a high peak in 1925. The stronger resistance of the latter was attributed to the larger numbers used in the cotton industry, for which mechanical power developed more slowly. The total number of horses and mules on farms in Jan. 1946, 11,455,000, was less than half the all-time record number of 26,700,000 in 1918.

The horse disappeared most quickly and completely in the cities. In 1910 there were about 3,500,000 horses enumerated as not on farms, while in 1945 the number was estimated to be only 200,000. The number of mules declined from 387,000 in 1910 to 75,000 in 1930.

During 1937–46, the number of horses declined from 11,342,000 on Jan. 1, 1937, to 8,259,000 on Jan. 1, 1946. The number of mules dropped from 4,460,000 in 1937 to 3,196,000 in 1946. This total of horses would allow only about one and one-third per farm. The number of tractors on farms was estimated to be 1,231,000 in 1937 and 1,953,000 in 1944, together with 1,080,000 motor trucks in the latter year. Farm automobiles were estimated at 4,100,000 in 1944. The increased use of trucks and tractors in cities was also the chief factor in eliminating the horse there.

Previous wars had created a special demand for draught animals, especially mules. Prices rose sharply in Sept. 1939 in anticipation of a demand during World War II, but dropped within a few months when it became evident that the motorization of armies was proceeding rapidly. Another demand for animals to replace the reduced supply of tractors did not materialize. Some foreign armies bought several thousand horses and mules which were never shipped and were sold later at reduced prices. The US. army purchased and used a few hundred animals in the



U.S. army horses training for hurdle jumping in 1942 at Front Royal, Va. They were given 80–120 days of training for military service

South Pacific operations. There was also a decline in the number of riding horses because of the closing of riding stables and the restrictions on gasoline to travel to these recreation centres. Horse breeding on farms declined in 1942 until there were not enough colts to provide for replacements for farm horses. The annual disappearance of old horses was greater than the number of colts raised for several years. Foreign trade in horses had never been great and was confined to small numbers of breeding stock.

The slaughter of horses increased in 1943, when 56,500 head were killed under federal inspection. Some of these animals were imported from Canada and Mexico and others were wild horses from the western range country. The horse meat was used chiefly for pet-stock foods, tankage and bonemeal, and a small quantity was exported to countries using horse meat for human consumption. The high price of meat led to the slaughter of more than the usual number.

Prices of horses averaged \$88.50 per head during the fiveyear period 1935-39 compared with an average of \$136.00 per head in the period 1909-14. Mules were more valuable than horses, selling for \$106.10 and \$153.90 per head for the same periods. By the spring of 1946, the average farm price of horses had dropped to \$58.00 per head and mules to \$108.00 per head.

The number of light horses for racing and riding was estimated at about 20,000 head of all types in 1946 and was not increasing. The main handicap to riding continued to be the lack of bridle paths free from automobile traffic.

The number of horses and mules exported by U.N.R.R.A. was small until 1945, when ships were remodelled to haul them. Many boatloads were sent in 1946. In July 1946, U.N.R.R.A. reported that the deliveries of work animals were as follows for certain countries; Greece, 18,600 head;

Yugoslavia, 17,800; Poland, 40,000; Czechoslovakia, 4,500; and Italy, 800. Most of these were sent from the United States but U.N.R.R.A. purchased horses in all countries that had a surplus for sale. Plans were developed to buy and ship 150,000 head of brood mares before the end of 1946, but shipping difficulties delayed these shipments to some extent. The total of work animals exported by all agencies was estimated at about 250,000 head. All these animals were branded with U.N.R.R.A. and turned over to the governments for delivery to the farmers. The mares were bred whenever possible before shipment. The demand was strongest for mules and mares, from which more mules could be raised.

Number of Horses and Mules in United States, 1937-46

																					Horses	Mules
1937																				٠.	11,342,000	4,460,000
1938																					10,995,000	4,265,000
1939																					10.629.000	4,163,000
1940																					10,442,000	4.039.000
1941																					10.214,000	3.922,000
1942													٠	٠					٠		9,907,000	3,813,000
1943		_																			9,675,000	3,701,000
1944																					9.302,000	3.513.000
																					8,841,000	3,408,000
1945	٠	٠		•	٠	٠	•	٠	•	٠	•	٠	•	•	•	•	٠	٠	•	٠		
1946	٠	•	•	•	•	٠	•	•	٠	•	٠	٠	٠	٠	•	•	•	٠	•	•	8,259,000	3,196,000

The number of horses in the world was reduced sharply during World War II by invasion, uncontrolled disease and interrupted breeding operations. The best estimates put the reduction at 20% in Europe as a whole, though U.N.R.R.A. reported that 50% of the work stock was gone in some countries. While the purchases of horses further reduced the number in the United States, the price per head was about the same at the end of Aug. 1946 as a year earlier. (See also Shows [Animal].) (J. C. Ms.)

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Horse Shows

See Shows (Animal).

Horthy de Nagybánya, Nicholas

Horthy (1868—), Hungarian statesman and naval officer, was born June 18, 1868, at Kenderes, Hungary, the scion of an old Hungarian family. He entered the naval academy at Fiume, Italy, at the age of 14, joined the Austro-Hungarian navy and was promoted to high naval positions. He also was aide-de-camp to the Emperor Francis Joseph. During World War I he was in command of a cruiser and conducted daring raids on shipping off the Italian coast. He received the Order of Maria Theresa, highest Habsburg award for personal heroism.

Toward the end of the war he acted with severity in quelling mutinies among the Austro-Hungarian sailors in protest against their rations. His promptness in checking the mutiny led to his appointment as admiral and commander of the entire fleet.

Following the collapse of the dual monarchy in 1918, Horthy was named minister of war in the Szeged cabinet. He organized a counter-revolutionary army and put down the communist insurrection led by Bela Kun. He was named regent of Hungary, March 1, 1920, by the national assembly and the following year he thwarted the attempts of the former emperor, Charles, to resume the Hungarian crown. Thereafter, Horthy devoted his efforts to solidifying his relations with Italy and Germany. In Oct. 1935 Horthy opposed the League's instigation of sanctions against Italy. In return for supporting Hitler in his many prewar campaigns, Horthy was rewarded with Ruthenia,

which was transferred from Czechoslovak to Hungarian sovereignty after the Munich pact in 1938.

Hungary was neutral at the outbreak of World War II but joined the axis pact in 1940. In 1941 the government declared war on the soviet union on the same day that the wehrmacht invaded the U.S.S.R. Horthy's position was weakened by axis reversals in the east in 1942–43, and the approach of the Red army in 1944 led the regent to appeal for an armistice, Oct. 15, 1944. However, the legitimist regime was overthrown by Hungarian nazis and Horthy and his family were taken into custody by the Germans.

Horthy's capture by troops of the U.S. 7th army in northern Tyrol was disclosed May 1, 1945. Upon his subsequent release, the Yugoslav government filed a request that Horthy be turned over to it for trial as a war criminal.

Horticulture

Several distinct horticultural trends appeared in the period 1937-46 in spite of wartime disruptions.

The decline of the large private garden was stimulated under the pressure of excessive taxation and because of a lack of interest in a pseudo-feudal type of living on the part of the younger generation of wealthy families, particularly in England. World War II speeded the process by limiting the labour supply. Once-proud estates were sold cheaply to charitable and educational institutions and public agencies, or were subdivided for the construction of small housing units The result was fewer salaried jobs for trained gardeners and the abolition of one type of training facility for young men.

The declining apprenticeship system of horticultural training was revived in the United States, however, by veterans' on-the-job training. Almost everywhere, horticultural education was established by state institutions with a separation of practical training courses and those dealing with the underlying sciences. Extension services in each community were broadened to include all phases of horticulture. Radio served well in extension work, including the British use of television to teach gardening technique.

Food raised in small home areas prevented serious shortages and maintained reasonable market prices. Expert war gardening advice brought better technique into home gardening operations. The therapeutic side of gardening was discovered by more people working under stress, both in individual plots and in groups, particularly in military hospitals.

In the United States, inland and western cities followed the eastern trend of making the spring flower show dominant among each year's horticultural exhibitions. These major show programs—interrupted everywhere except in Boston—were quickly resumed at the close of the war. In Europe, too, major exhibitions were not held after 1939. Small shows were held during hostilities at times by the British Royal Horticultural society.

At the same time, local shows and, particularly in the United States, specialized exhibitions of individual plants such as the Boston lily exhibition, gained headway during the war years. Local shows in all countries were made an important part of the home food-raising program, especially in Great Britain. In the United States, the local fair emerged from the war years with greater attendance than ever before.

The firmer establishment of competitive exhibitions was a reflection of the increased functioning of general nationwide or regional horticultural societies, which gained strength during hostilities by adapting their programs to the war effort. In addition, improvement of numerous specific plants or types of gardening was fostered by societies such as the organized Dutch bulb growers, the British Alpine Garden society and the American Rose society.

In the United States, special plant societies by registration and adequate preintroduction testing reduced confusion in nomenclature and improved the general quality of named garden plants along lines well established in European countries. The close of the decade 1937–46 brought definite steps toward the founding of a longneeded, over-all organization to co-ordinate the efforts of the thousands of horticultural organizations in the United States.

The public gardens and experiment stations gave more attention to the testing of plant materials, to determine local adaptability as well as relative quality. Although this work lapsed during wartime, interest in the establishment of demonstration gardens and arboretums and the opening of community garden centres was greater than ever. Some institutions of service to horticulture lost herbarium and library facilities during the war, particularly in Berlin and Manila.

With the publication of the New Standardized Plant Names, the international code of botanical nomenclature became standard among horticulturists. Attempts at standardizing the common names of plants were not successful. Horticultural publications were better written than formerly, with general gardening dictionaries predominating. Garden magazines increased in number in the United States and achieved greater circulation.

An era of great plant explorers closed with most of the carth's showy wild plants discovered and introduced into cultivation in climatically suitable areas. With the collector's product as raw material upon which to work, the geneticist began to produce hybrids made to order for particular soil and climatic conditions; for pest resistance; colour, size, form and season of flowers; yield, size, season and nutritive properties of seeds and fruits, and in other ways accentuating horticulturally desirable plant properties. In addition to controlled cross pollination and careful selection, cell changes caused by X-rays and the drug colchicine produced plants not known in the wild.

In temperate regions, the greatest mass application of scientific advance to plant breeding was with corn, both for productivity and disease resistance, also with onions. In both Great Britain and America, culture of the hybrid tomato was begun, but with difficulty because of the need for hand pollination.

Perhaps the most intensive plant breeding programs were those seeking to extend the northern limit of crop ranges, principally by soviet workers, also in the northern plains country of the United States and Canada. Among the ornamental plants, the outstanding new rose was "Peace," of French origin, indicating that European rosarians still led in that field. The famous French rose tests at Bagatelle were resumed after the close of hostilities.

Interest in some favourite plants of long ago was revived. The camellia, with its hundreds of named varieties, again became one of the most sought-after garden plants, particularly in the warmer coastal sections of southern and western United States. Orchids, too, came into their own as commercial cut flowers and as plants for hobbyist gardeners.

Orchids in Europe survived the war years and were among the first blooms to be offered in quantity at the cessation of hostilities. The pelargonium or geranium and the begonias recaptured popular fancy. The chrysanthemum as a garden plant gained steadily in popularity.

Even in the war years, the garden lily staged a comeback



The "Peace" rose, a new variety which created considerable stir among rose fanciers in 1945, and was chosen the All-America Rose selection for 1946

in great variety, particularly in the United States. This trend was fostered by Britain's Royal Horticultural society before the war. The reason for increased activity in lily growing was the advent of many new hybrids and the need for home production of lily bulbs formerly imported from Japan, particularly Easter lilies. Research by the U.S. department of agriculture looking toward home-raised Easter lilies did much to promote the cause of the lily generally. Bulb culture in general made rapid strides in the northwest in the ten-year period.

Demands for food production led to the liquidation of stocks of ornamental plants, especially in Great Britain. Inventories everywhere were evaluated, and many inferior varieties were dropped. In some parts of Europe, particularly Belgium, the Germans protected the equipment and personnel of ornamental horticultural enterprises and distributed the product throughout occupied areas. Failure to propagate during the war years led to postwar shortages of hardy garden plants and the apparent planting of easily-grown, hardy plant materials of lesser garden value, thus repeating the experience of World War I.

The Netherlands bulb industry survived the war and started at once the fight to regain its position in the bulb market, chiefly with tulip bulbs, because its hold on daffodil production was broken by U.S. growers in the years when daffodil bulbs were excluded. French producers reentered the world market with Madonna lily bulbs soon after the war closed. They, like the Dutch, had to meet with competition from newly established growers in the

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United States. Mexico appeared among the suppliers of lilies. A similar industry began growing in Florida, largely because Japanese imports were cut off.

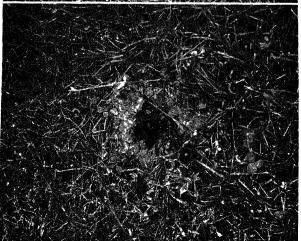
Shipment by air became an important factor in the distribution of flowers, and to some measure, fruits and vegetables. Not only were different growing areas in one country thrown into competition, but producers in all parts of the world became able to ship to common markets. This led to restrictions on the exporting of orchid plants from some of their native areas in South America. Such quick transportation of flowers seemed to lead to a florists' development similar to that created by quick-freezing in the vegetable and fruit industry, wherein production took place in the most naturally favoured location.

In commercial fruit raising, the apple of the northern grower continued to lose out to the citrus fruits of warmer sections. The wider production of a greater range of subtropical fruits attracted interest. By the end of the decade, there were more named varieties of the avocado than of the apple. Advances were made in fruit processing, not alone in freezing, but in new products, such as apple syrup, apple flavours and canned, dehydrated and frozen citrus juices.

The prediction of the exact harvest date by determining the number of days required from full bloom to ripe fruit

Dandelion (top) which has been sprayed with 2,4-D, a plant growth hormone, developed during World War II, which acts as a weed killer when sprayed in large doses. Within three to four weeks the entire root section of the plant is destroyed (below)





was made possible.

The grape profited in the United States through wartime disruption of the European wine industry. New varieties of peaches replaced the older. The cranberry industry was among the most profitable and best managed horticultural ventures in the United States.

Because of suitable growing conditions and because of chaotic conditions elsewhere, much of the seed industry of the world became centred in western United States, this being particularly true of flower seed production in California.

With the cessation of hostilities, the production of seeds, like that of flower bulbs, was resumed in Europe and elsewhere.

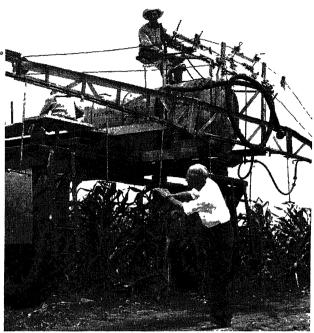
During the war, U.S. seeds were lend-leased to the British, to the U.S.S.R. and other countries, with the result that some U.S. varieties became standard abroad. Likewise, there were other limited exchanges of varieties, such as soviet tomatoes in England and North African squashes in the United States. Also, an oil-bearing, naked-seeded European squash was introduced into America.

When foreign supplies of medicinal, culinary and pesticidal herbs were cut off by war, a U.S. industry for the growing of aromatic plants was envisaged. Higher U.S. production costs worked against the project, however, and except in a few instances of flavouring materials, the market proved not large enough to justify mass production methods. American users of herbs began looking once more to foreign suppliers, with their products of cheap peasant labour. Herb interest caused the reintroduction of the old-time cooking herbs into home gardens. A cottage industry in these plants grew up in some parts of the country.

The results of research in chemistry and plant physiology were adapted upon publication to plant-growing and crop-protection technique. Notable in this trend was the development of varied uses for synthetic plant growth regulating substances or phytohormones. Starting with treatments to stimulate the formation of roots on cuttings and newly transplanted plants, this field was expanded to include the delaying of flowering time of woody plants to escape frost injury, the thinning of fruit crops at blossom time, the prevention of the premature dropping of fruit, the production of fruit in tomatoes and holly without pollination, the retention of leaves on Christmas holly after cutting, the prevention of sprouting in stored potatoes, the hastening of ripening in storage of some fruits, the killing of weed seeds in soil, prevention of ragweed pollen-shedding and other uses involving the artificial control of the behaviour of plant cells.

It was found that the varied actions of the plant growth regulating substances were often accomplished by varying the concentration. An overdose of one called 2,4-D became the basis of a quickly popular weed killer destroying broad-leaved lawn weeds without seriously affecting turf grasses. By combining 2,4-D with other materials, it became possible to weed, feed and protect a lawn against fungi in one operation. This and other plant-killing materials grew out of wartime research into means of destroying crops in axis countries.

Lawn protection was but a single instance of the trend toward safe, cheap and effective destruction of unwanted plants by chemical means. The selective properties of some tested materials, such as the weeding of carrots with a certain dry cleaning fluid, saved labour in cultivation. Even with plant destroyers displaying no selectivity, the fire hazards, soil sterility and poisonous properties of the older herbicides were eliminated in new materials such as



Illinois farmer, using a specially designed tractor, is shown in 1946 about to spray his cornfield with syndeet, an insecticide containing DDT. Developed and tested by the U.S. Rubber Co., the spray proved successful in killing the troublesome corn borer

ammonium sulfamate, 2,4-D and borax when properly applied. These three chemicals furthered the U.S. campaign for poison ivy eradication, started by the Massachusetts Horticultural society.

The development of crop-protective chemicals, both insecticides and fungicides, moved rapidly. DDT, taken over by U.S. chemists from Swiss sources, with which the military controlled typhus, did not prove itself revolutionary in horticultural practice as expected and did not replace other insecticides for crop-protective purposes except in the case of the potato, and for the control of certain pests such as chinch bug, Japanese beetle, rose chafers and codling moth. However, it was found to lend itself particularly well to aeroplane treatment of wooded areas for the control of gypsy moth, or with newly developed fog machines from the ground. Rotenone and the newer sabadilla dust, neither harmful to warm-blooded creatures, held their own. Rotenone production in Peru was stimulated with U.S. aid. Sabadilla provided a long-sought control of the squash bug and the chinch bug.

Among the many new fungicides was fermate, representing a group of synthetic materials which gave promise of rendering the traditional Bordeaux mixture obsolete. The fact that these new materials, many of them specific for certain pests, could be used in combination fostered the trend toward complete pesticides, lethal to all manner of plant enemies. Another trend was the increased application of crop-protective chemicals in the form of dusts rather than as liquid sprays. Soil-borne organisms were fought more widely by soil fumigation with such materials as chloropicrin and by preplanting seed treatment with a variety of fungicidal dusts. Also, the feeding of plants with chemicals, such as a selenium compound in the case of the carnation, to render the plant sap unpalatable to specific pests, reached the practical stage.

The timing and make-up of pest control materials were modified to avoid destruction of pollinating insects. Conservation measures looked to the protection and propagation of beneficial insects. Where pollination of fruit trees was a problem, methods of artificial pollination with liquid or dust pollen preparations were devised. Natural insect and fungus enemies of pests such as the Oriental peach moth and the Japanese beetle were widely introduced into the United States, thus promising relief from hitherto uncontrolled destruction.

A very articulate international group of organic gardeners, following the lead of Sir Albert Howard in England, insisted that proper plant nutrition and soil maintenance would largely eliminate the need for heavy dosing with pesticidal chemicals as a means of crop protection. Research evidence from scattered experiment stations was put forward to substantiate this claim, as in the case of chinch bug attacking nitrogen starved corn.

The rapidly expanding organic gardening movement grew out of remembrance that, years before, excellent crops had been raised with only organic replacements such as barnyard manure. Its protagonists insisted that all chemical soil amendments, except lime, were harmful to both the immediate crop and permanent soil maintenance. The widely accepted conclusion was that both organic means of soil building and mineral replacements with chemicals were necessary; that either method alone was incomplete.

A sharp difference of opinion was created by Edward Faulkner's contention that the plow is the enemy of the soil. The argument focused attention on proper soil handling. One conclusion was that deep soil preparation was not wrong provided the top soil and the organic material were left near the top, and the loosened subsoil enriched with lime and phosphorus—on the bottom. Trash-tarming—enriching soil at the top and deepening it below—was called to favourable attention.

The idea of growing plants without soil by irrigating with carefully balanced nutrient solutions was carried to a high point of development. Starting with the culture of plants so supported that their roots dangled in tanks of aerated nutrient solution, the method was modified later so that the plants were planted in sand, gravel, cinders, vermiculite or some other inert material periodically flushed with the nutrient liquid. This method was widely adopted by the florist industry to produce roses, carnations and even orchids. Its employment for vegetable raising by the military at such places as Ascension Island during World War II received wide publicity. The expense of installation limited the use of the method where it was not necessary. Nutritional deficiencies were determined by chemical analysis of plants as well as soil. Signs of hunger for specific elements as indicated by plant appearance became widely recognized.

Aside from nutrition, plant environment was carefully studied. By controlling day length, it became possible to have chrysanthemums bloom every day of the year. Irrigation equipment was more widely installed to maintain uniform moisture conditions throughout the growing season. By the use of cloches and underground heating cables, British gardeners considerably extended the growing season. American investigators devised means of rooting cuttings and starting seedlings in any building through the use of artificial light and heat. The breaking of dormancy of bulbs and corms for forcing through temperature control and chemical application was reduced to exact processes.

Horticultural equipment became more mechanized even for smaller operations. Small tractors were perfected and equipped with tools for all functions. Lawnmowers, hedge

trimmers and pruning equipment were motorized. New cutting principles for lawnmowers were pioneered. Lightweight metals were used, as in aluminum pruning shears and magnesium wheelbarrows. Plastics found their way into garden hose and hotbed glazing. Only the porous clay flower pot seemed to resist change.

Similar advances were made in larger machinery such as that for tree moving. Large spraying units were revolutionized to permit fast coverage with a minimum of material. (See also BOTANICAL GARDENS; BOTANY; FRUIT; VEGETABLES.)

(E. I. F.)

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See McAfee, MILDRED HELEN.

Hosiery

See RAYON AND OTHER SYNTHETIC FIBRES; SILK.

Hospitalization Insurance

See Hospitals; Insurance.

Hospitals

The hospital, after World War I, changed from a mere last refuge for the sick and a convenience for the doctor to the safest, most comfortable, and most economical place in which to be sick, and a necessity for the doctor who wished to give the best possible care to his patient.

United States.—The decade 1937-46 saw the realization of these facts by the general public, with the result that hospitals were severely taxed to meet the demand for their facilities. The depression years found hospitals financially unable to meet the demands which they had clearly foreseen, and the curtailment of materials during World War II continued to prevent their meeting this shortage. Thus, while the number of beds available in the U.S. nongovernmental general hospitals increased by only 14.8% during 1936-45, the number of patients admitted increased 59.2%, and the average number in hospitals at any one time increased by 37.2%. The discrepancy between the total number of patients admitted and the disproportionally lower average number of patients in hospital at any one time was largely explained by the fact that, while the average patient remained in the hospital 12.47 days in 1936, the average stay was reduced to 10.8 days in 1945. This shorter stay reflected not only better care rendered the patient as a result of advancements in medical science but the fact that, with the public's greater acceptance of the hospital, patients were inclined to enter the hospital earlier in the course of their disease. This earlier active treatment shortened the period of illness, decreased total period of disability and the hazard of permanent disability, decreased the mortality rate, and reduced the financial cost to the patient.

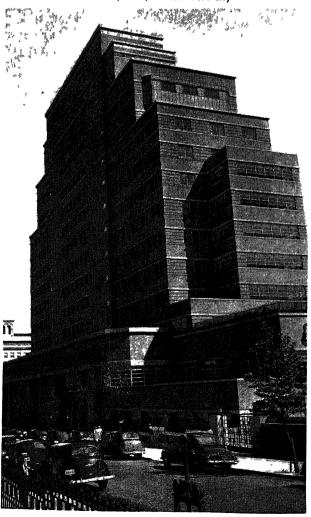
Approximately one-third of all U.S. hospital beds for the treatment of acute disease in 1946 were in tax-supported institutions, varying from large state university hospitals to the familiar city or county charity hospital. As a reflection of changing economic conditions, the average number of patients in tax-supported hospitals increased by 10% during the period 1936-40 and then decreased 16.6% during the period 1941-45, or an over-all decrease of 8.2% for the ten-year period. Again, there was

a sharp decline in the average days' stay per patient from 54.7 days in 1936 to 26.3 days in 1945, probably explain able by the same reasons as given in the case of nongovernmental hospitals. The marked shift from nongovernmental to tax-supported hospitals beginning about 1941 could be attributed in part to the improved economic conditions following the outbreak of World War II.

A very great factor, and one which promised to continue, was the development of Blue Cross and other hospitalization plans. On Jan. 1, 1936, there were only 214,000 persons in the United States protected by Blue Cross hospital insurance. By Jan. 1, 1941, this figure had increased to 6,149,000; and, by Dec. 31, 1945, to 20,000,000. With more than 20,000,000 people (probably 25,000,000 if plans other than the Blue Cross were included) covered by sickness insurance, the shift from tax-supported to voluntary hospitals was understandable and promised to be a potent and permanent element in financing the cost of hospital care.

Rising costs of hospital operation in 1946 were causing much concern as to how the hospital could render adequate service at a price that the patient could afford to pay. A nation-wide survey revealed an increase of 54.3% in actual current costs of operation during the period from 1940 to 1945. These increases were due not only to wage and commodity cost increases but to shorter working hours as well. The hospital had to continue operating

Memorial hospital, world's largest cancer institute, was opened June 14, 1939, in New York city



and caring for its patients 24 hours a day and 7 days

At the beginning of the decade, the vast majority of patients either paid their own hospital bills or had them paid by charitable endowments, community chests or local tax funds. At the end of the decade, the trend was all in another direction. Blue Cross already protected more than one-seventh of the population, and Workmen's Compensation and similar liability insurance paid a large proportion. During World War II, the federal government, through its Emergency Maternity and Infant Care (E.M. I.C.) program, assumed responsibility for the payment for hospitalization of the wives and minor children of men in the armed services. After the war, the Veterans' administration, which forecast a need of 300,000 beds for the care of veterans, initiated a program which was expected to permit a reduction of beds in veterans' hospitals by about 150,000, by caring for the other 150,000 veterans with service-connected disabilities in civilian hospitals and by doctors located in the veterans' own home communities. In some communities, 60% of all payments in 1946 were made from such nonpatient sources: Blue Cross, commercial insurance of various types or tax funds. Some informed observers predicted that such payment from sources other than direct payment by the patient himself would soon reach 75% of the hospital's total income.

This shift in sources of payment was accompanied by peculiar problems. Blue Cross rates to subscribers were established during a lower-cost period and, while actuarily sound at the time of their establishment, were in many cases inadequate, by 1946, to permit the company to meet the rapidly increasing costs to hospitals. Commercial insurance companies and tax-spending agencies had traditionally driven hard bargains with hospitals, demanding minimum rates for payment-often far below the cost of care. At least 75% of the cost of operating a hospital had been a continuing cost, more or less irrespective of the number of patients being cared for. Hospitals had often accepted these reduced rates on the theory that such patients added to the income more than they added to the cost of operation. It had been a tradition in all medical service that charges should be graduated according to the ability of the patient to pay, rather than according to the immediate cost of the service rendered. Hospitals quite generally adopted this medical tradition and charged rates higher than cost to private and de luxe patients to compensate for the losses on those unable to pay cost. This was justified as a method of ensuring care to those unable to pay for it. The hospital was operated on a notfor-profit basis. All it could hope for was to remain solvent, and this seemed the most practical method of attaining its goal of serving rich and poor alike, according to their hospital need, irrespective of their ability to pay.

By this shift of sources of payment to corporations, both profit and nonprofit, and to tax-spending agencies which had to justify every payment made, meant that the number of patients who could pay more than cost was very much reduced, and the "enforced philanthropy" principle was no longer adequate. Formerly, in the era of large private fortunes, hospitals were the recipients of somewhat generous endowments and other gifts from which to pay for such service as was rendered at less-than-cost rates. But later tax practices tended to destroy large private incomes and to convince the large income-tax payer that he had already contributed his share to the public welfare and that large voluntary contributions to philanthropic causes were no longer an obligation.

Thus with philanthropic income, whether voluntary or enforced, drying up, it became necessary for hospitals to face economic facts. The theory that a "half a loaf is better than none" no longer applied. Service to the patient was becoming a commodity, each unit of which had to be paid for on its own merits if the hospital was not to face insolvency and closed doors.

A bright spot in the picture was that the U.S. children's bureau, charged during World War II with the administration of the E.M.I.C. program, accepted the principle of paying each hospital an amount equivalent to its own current cost of operation plus 10% to cover depreciation on plant and equipment. This principle was justified by the fact that the better service the hospital gave, the more it cost. The Veterans' administration in 1946 was contemplating a similar formula for patients sent to civilian hospitals. With these strong precedents, it was hoped that other contractual agencies in the hospital field could be induced to make full payment of costs for service rendered their beneficiaries. Only when this was done could the hospital be assured sufficient income to permit it to continue giving adequate service. In general, any single, fixed, flat-rate system of payment tended to benefit the hospital giving poor service and to penalize the hospital giving adequate care to its patients.

As a part of the nation-wide business census of 1935, the U.S. public health service conducted the most exhaustive survey of hospitalization ever attempted to that time. Part of the findings of this survey indicated that availability of hospital facilities was more a matter of maldistribution of facilities than of over-all shortage. High income and densely populated areas were relatively well supplied while low income and thinly populated areas were not only poorly supplied but did not use such facilities as were available to the same extent that the better provided areas did. This study eventuated in a plan for a series of hospitals consisting of small medical centres having a few beds for emergency purposes, district hospitals to serve larger areas, regional hospitals to which the more difficult cases could be referred by district hospitals and, finally, large medical centres to which the more rare and complicated cases could be referred for highly specialized procedures beyond the facilities of the regional hospitals.

Another result of this survey was the introduction of federal legislation to provide federal funds to states to assist them in meeting the shortage of facilities within their own states in case of demonstrated need; i.e., both need for additional facilities and demonstrated need for financial assistance in providing them. The Hospital Construction act passed by the U.S. congress in 1946 authorized federal grants to states on a matching basis for the making of surveys to determine the number and location of additional hospital beds needed, and to make grants of funds to states on a one to two matching basis for such hospital construction as adequate surveys had shown to be needed. Once granted, such funds were to be administered by an agency of the state created for that purpose.

In 1943, the American Hospital association, contemplating the need for orderly expansion of hospital facilities within the United States, secured funds from three of the large philanthropic foundations and sponsored the appointment of a representative commission to make a nation-wide survey of hospital facilities. This commission conducted a pilot survey of the state of Michigan and began assisting all other states which desired to conduct similar surveys of their facilities. These surveys included

exhaustive factual data concerning every institution which rendered any type of hospital care within the state. By mid-1946, 11 states had completed the collection of data, 28 were in process of doing so, and the remainder were definitely preparing to conduct surveys.

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Great Britain.—It was clear at the outset of World War II that all British hospitals would need to be organized as a single service if large numbers of casualties were to be handled efficiently at short notice. The minister of health, therefore, assumed responsibility for establishing an emergency hospital service, a detailed account of which was given in the summary annual reports issued by the ministry of health, especially those for the years 1942, 1943 and 1945. The organization of the service was entrusted to medical men, matrons and administrators designated by the minister of health, but the administration of the hospitals remained in the hands of the voluntary hospitals, or of the local authorities respectively. By Sept. 1939 arrangements had been improvised and a large number of beds made available for the receipt of casualties. In the great cities many thousands of patients were evacuated to safer areas. The absence of serious air raids during the first year of World War II afforded a breathing space, and

Wesley Memorial hospital, at Chicago, III., completed in 1941 with accommodations for 525 beds and staffed by the medical school of Northwestern university



when the test came with the casualties from Dunkirk and the air raids of the battle of Britain in 1940, the organization functioned with success. The hospitals suffered severely from bombing; in London, St. Thomas's hospital, Guy's hospital, the Royal Free hospital and the London hospital were among many severely damaged. In almost every heavy raid the hospitals were hit, but the loss of life both among patients and staff was much less than might have been expected.

These wartime experiences served to throw into relief the deficiencies of the existing dual hospital system with its many autonomous units of varying size and efficiency, and to emphasize the value of the national framework provided by the emergency hospital service.

A White Paper issued in 1944 had proposed a comprehensive hospital service which should be free to all irrespective of ability to pay. It envisaged a system of partnership between the voluntary hospitals and those of the local authorities.

Under the National Health Service act of 1946, all hospitals in England and Wales, including such well-known institutions as St. Bartholomew's, St. Thomas's, Guy's and the London, as well as the hospitals administered since 1930 by the county councils, passed into the ownership of the minister of health. The act did not extend to Scotland, but it was expected that legislation on similar lines would follow at an early date. It was provided that the minister should delegate his responsibility to regional boards, and the day-to-day management of the hospitals was entrusted to local management committees. A great deal of freedom was conferred on the teaching hospitals. Provision was made for income from the endowments of the voluntary hospitals (estimated at about £200,000,000) to be used by the regional boards and the respective committees as "free" money over and above the provision made by the minister for ordinary expenses. The hospital management committees were empowered to receive gifts from the public, and from trusts.

British Commonwealth.—In the dominions also the decade was marked by a series of attempts to plan complete hospital systems. In New Zealand, where a system of hospital boards was already in operation, the Social Security act of 1938 provided for free care to all using public hospitals, and for an equal scale of payments to those using private hospitals. In Australia and South Africa rapid progress was being made toward the establishment of a comprehensive service. In Canada, with its more highly developed voluntary system, there was evidence of hesitation on the question of public control, but in 1945 the dominion government tabled proposals for loans to the provincial governments for hospital expansion, and further developments were being awaited with interest.

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(A. G. L. I.)

Europe.—Normal development in European hospital work was hampered or totally paralyzed in belligerent or occupied countries during World War II. A great number of temporary war hospitals were erected, but most of them would have little influence on future hospital shaping. Few large building enterprises were begun during 1937-46 in countries that had previously made important contributions in the domain of hospital work, such as Germany, the Netherlands, Belgium, Denmark, Norway and Finland. During the last phase of the war, and as soon as hostilities ended in May 1945, the authorities in several countries responsible for hospital development



Hospital Beaujon, accommodating 1,100 in-patients, was built in suburban Clichy, outside of Paris, prior to the outbreak of World War II

were anxious to bring about an international exchange of experience. In 1946, especially in the northern countries, planning had begun and measures were taken for recovery.

France.—In 1944 the prominent French hospital constructor, Jean Walter, and his colleagues brought out a survey of the development of French hospital work. Just before the outbreak of World War II the hospital Beaujon outside Paris (1,100 in-patients) was completed. In 1946 a hospital was being built at Lille. Elsewhere also building was in progress, although on a smaller scale. In Angora, Turkey, a hospital was constructed by Walter.

Switzerland.—At Zurich a large university hospital (1,500 in-patients) was partly completed in 1946. The hospital was designed by a staff of co-operating architects, physicians and others led by Dr. H. Fietz. During World War II the interesting hospital Bürgerspital at Basel (600 in-patients) was completed. In several other places in Switzerland plans for reconstruction or for new hospitals were being sketched out, as at Wintherthur (700 in-patients).

Sweden.—Shortly before World War II the main part of a new university hospital in Stockholm, Karolinska hospital (1,059 in-patients) was completed. During the war the city of Stockholm erected the Soder hospital for 1,200 in-patients, which was to be in full service in 1947. It was constructed as a diagnosis centre and constituted a link of an extensive medical and general social plan, comprising many institutions. In Gothenburg, Lund, the county of Stockholm and other places extensive hospital building was planned. (C. H. Cm.)

Hotels

The decade ending in 1946 witnessed profound changes in the hotel industry of the United States. The long period of depression ended, the beginning of com-

parative prosperity appeared. Room occupancy in large cities reached the unheard of figure of 95%, from a low of 50% in the middle '30s. Restaurants and bars turned away patrons; night clubs again became profitable; banquets and private function business reached new high levels.

The hotel investment field, long regarded with disfavour by investment counsel, presented new opportunities, with fixed charges sharply reduced by reorganization. Shrewd capitalists purchased famous hotels just emerging from financial difficulty at bargain prices. Chain operation of hotels expanded greatly. The \$26,000,000 Stevens hotel in Chicago, Ill., was first bid in for \$5,250,000, and later resold to Conrad Hilton and his associates for \$7,500,000. The Palmer House, Chicago, was purchased later by the same interests at less than ½ its cost of construction. In New York city, the luxurious Hotel Pierre, which cost approximately \$12,000,000, was sold for \$2,500,000. The smart Ritz Carlton, built and furnished at an expense of more than \$3,000,000 brought less than \$700,000 in a resale.

During the 10 years, almost all hotel labour was organized into unions, chiefly controlled by the American Federation of Labor. The ratio of pay rolls to receipts rose from about 25% in 1936 to nearly 40% in 1946. The great gain in bar and restaurant business which began in 1940 brought about a corresponding increase in tipping, and the disparity of compensation between tip and nontip employees became a serious problem to labour and management.

In 1946, the prosperity of large U.S. hotels was, therefore, still relative, in spite of high occupancies and peak business in bars, restaurants and other departments. Room rate and price control exercised reverse leverage upon hotel earnings, since sharply increased operating costs could not be offset by expansion of sales, limited in hotels by the capacity of the structure.

The easy tradition of hotel operation, inherited from England and the continent, possible only with low wage scales, was replaced by ruthlessly efficient control of all expenditures and elimination of all wasteful practices.

The manager portrayed by Ludwig Bemelmans in *Hotel Splendide*, serenely unaware of what transpired in his hotel, had disappeared. The ratio of three employees to each guest described by Arnold Bennett in *Imperial Hotel* as necessary for perfect service in a famed English institution no longer existed, even in England.

The depression in the U.S. hotel industry which began before the slump in 1929 intensified until the beginning of World War II. By 1937, 82% of the nation's hotels had defaulted on their obligations; nearly \$5,000,000,000 in securities declined to a mere fraction of their issue price. This was the disastrous outcome of overbuilding, and reckless financing, resulting in rate slashing and inexpert management that were the inevitable result of the nationwide overexpansion of hotel facilities. It was free enterprise at its worst.

Banks, insurance companies and mortgage houses of issue found themselves involved in the control of large hotels without experienced personnel to take over their direction. From this, a new type of hotel management emerged, in which national firms of hotel accountants played an increasingly important part. Cost ratios determined menu selection, and the gracious precepts of Ritz and of Escoffier began to be replaced by more scientific practices.

This was not, in every case, a loss to the amenities involved in hotel and restaurant operation. More realism was employed. Menus were written in English instead of French, and dishes which indicated the preference of the diner rather than the chef became customary in the à la carte offerings of even the most noted hostelries.

As a result, the number of connoisseurs declined. Expected demand, after prohibition repeal, for the great estate bottled Bordeaux and Burgundy wines, the magnificent products of the Rhine and Moselle vineyards, did not materialize. The rigid convention of the sequence of wines to be served with each course of a long and elaborate dinner was discarded.

With it went the dignified, sometimes pompous atmosphere of the old world hotel. During World War II, men in uniform predominated in place of the customer who travelled for business or for pleasure. Evening dress was no longer seen and in the prestige rooms of the great hotels swing bands became popular instead of the modulated volume and tempo of what were called society orchestras.

Something called showmanship became a factor in business promotion. A restaurant in a Chicago hotel achieved national attention in a season by serving most of its dishes on flaming swords, by waiters in red coats and knee breeches.

. The cycle of change in architectural design of huge skyscraper hotels also moved toward greater simplicity. The Georgian inspiration vanished, and to replace it came modern, almost functional lines, with an occasional exception of the baroque style affected by Dorothy Draper.

Only one or two large hotels were erected in the United States during the ten year period 1937-46. At the 1946 completion cost of \$18,000-\$20,000 a room (land, furniture, equipment and building) for such giant edifices as the Waldorf Astoria in New York city and the Palmer House in Chicago, the investment had become economically unsound and unjustifiable.

There was, of course, a great deal of remodelling of old hotel buildings. Since almost all U.S. hotels had been built before 1931, extensive alterations of bedrooms and public rooms were necessary, and as much of this was accomplished as was possible under wartime regulations. Substantial deterioration in furniture, equipment and structure of hotels still remained. At the end of 1946, U.S. hotels stood in need of repairs, re-equipment, alteration and reconditioning which would require expenditure of nearly \$1,000,000,000. This sum would be spent with a much more thorough knowledge of economical and efficient layout and arrangement of equipment and facilities. Labour-saving devices were considered on a scale hitherto uncontemplated by an industry previously committed by precedent to inefficient methods. (E. By.)

Hotels in Other Countries.—In the two years prior to the outbreak of World War II in 1939, the hotel industry in most countries suffered the repercussions of political events. The large cosmopolitan establishments, relying to a substantial extent upon clients from countries other than their own, were particularly affected by the constant political tension. However, differences in size, character and clientele were such that certain classes of establishments could do satisfactory business, while others, even in the same country, found the going hard. Generally speaking, however, the political events in every country of the world during the years 1937–39 affected hotel takings sufficiently to cause most managements anxiety.

Internationally, the hotel industry before 1939 was organized into two associations, the International Hotel alliance, grouping the national hotel associations of some 20 countries, and the International Hotelmen's association, composed of hotel owners and managers. In March 1946, at an international meeting held in London, England, these two bodies were merged into a new International Hotel association with Sir Francis Towle (Great Britain) as president.

În 1946 the new association had still to face some problems that had already come before the old alliance in prewar days. Tipping was one of them. During the preceding years the continental system of substituting a service charge for tipping made further progress although not infrequently managements decided to leave clients the choice between either. The abolition of tipping by law attempted under some dictatorial regimes had little success. But neither did the percentage charge system remove tipping. The problem of travel formalities, visa fees, currency regulations, internationally important already in 1939, had by 1946 gained in acuity. As formerly the old alliance had, the new association brought concerted action to bear on this problem.

It was similarly concerned with the publication of international hotel guides, uniformity of hotel rates, relationship with travel agencies, etc.

After the outbreak of World War II, the governments of belligerent countries were quick to use hotels for war purposes. Hotels were requisitioned for use as wartime offices for government departments and fighting services, for the billeting of personnel, as food and instructional centres and for other wartime activities. In Great Britain the government passed the Compensation (Defense) act, 1939, giving itself full power to take over hotels and other property, and providing for the payment of a compensation rental. Several hundred hotels were immediately commandeered in this way on the declaration of war to facilitate the dispersion of ministerial and departmental staff in anticipation of bombing. Requisitioning steadily increased until more than 4,000 British hotels had been commandeered. By Oct. 1, 1946, this number had been reduced to 558. Later in the war the government also requisitioned hotel furniture and equipment. In the defense areas on and around the south and southeast coast and elsewhere, most hotels were forced to close through lack of business, securing only a small measure of compensation through relief of tax and other debts, etc. Hotel business in "target areas," such as the large towns and cities, fluctuated with the varying threat of bombing. Outside these areas, with the growing shortage of accommodation, it prospered, despite the very great difficulties which faced managements on account of controls and shortages of every kind. Of the extensive wartime legislation, a high percentage directly affected hotels and restaurants. Statutory rules and orders covered every aspect of the hotel business, e.g., food rationing, fuel, clothing, equipment, prices, buying permits and supplies. The labour problem also proved exceptionally difficult, as large numbers of trained and experienced employees were called

In 1943 the minister of labour and national service, Ernest Bevin, introduced in the British parliament the Catering Wages act. It established machinery to deal with wages and conditions of employment in hotels and restaurants and all forms of catering establishments. The findings of wages boards were expected to determine future working conditions in the industry.

When World War II ended, rehabilitation of hotels be-

came the urgent problem of the industry in all countries. In this respect Switzerland, in particular, was fortunate. Its hotels had not been affected by the war to anything like the same extent as elsewhere. Certain Scandinavian countries were also more favourably situated than, for instance, Great Britain, France, Germany, Belgium and the Netherlands, where many establishments had been destroyed or had suffered bomb damage. But rehabilitation necessarily required adequate labour, equipment and supplies of soft goods, curtains, linen and bedding, cutlery, glass and other articles, for which the supply position in 1946 was still very difficult. Most countries and Britain in particular were faced with a housing shortage. Housing schemes claimed practically the whole of the labour, materials and equipment available. The need for greater exports also reduced the supply of goods in the home market. Thus, rehabilitation work was delayed and could not be expected to make any real progress until the priority claims of housing had been satisfied.

On the French riviera, in Belgium and the Netherlands great progress toward rehabilitation of hotels was reported at the end of 1946.

By 1946 most governments had discovered in "tourism" a valuable source of foreign exchange. But to attract visitors from abroad required adequate hotel accommodation. In Great Britain, the government in 1946 set up a new department under a special board which was responsible for the tourist industry, home holidays, the hotel and catering services. During the last years of World War II hotels were bought and sold extensively at greatly increased prices.

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(H. C. CE.)

Housing

During the ten-year period, 1937-46, there was increasing emphasis upon the construction of homes for lower income groups in the United States. In the earlier part of the decade that emphasis was occasioned by realization of social requirements. In 1941, when national attention was turned to the erection of war production plants and military camps, home-building attention was focused upon inexpensive construction for war workers and military personnel. When World War II ended, home construction was geared toward the returning veterans, three-fifths of whom according to surveys could not afford to pay more than \$40 a month for housing.

With the realization of the special need for low-cost housing, efforts were made to decrease the costs through economies in traditional building procedures and through prefabricating methods. During the early part of the decade some slight progress was made in this direction. Many lower-cost homes were built with private funds through Federal Housing administration (FHA) stimulation.

At the very beginning of the decade (1937) congress enacted the Wagner-Steagall act, which set forth a new governmental principle—that government would make loans and grants to provide housing for families of low income who lived in substandard dwellings and could not afford rents which privately financed units must ask. Prior to the inception of the war-housing program in 1941, \$800,000,000 was authorized by congress for loans to local housing authorities for the construction of sound homes with

light, air and sanitary facilities for low income families as an equivalent number of substandard homes were demolished. Congress also authorized grants which were used to pay for the difference between the actual cost of the units and the price at which they were rented. The aggregate amount of grants contracted for could not exceed \$28,000,000 per year. Actually, the amount paid in any one year through the decade, 1937-46, never amounted to as much as half of this maximum. Both the capital funds and annual contributions provided for the U.S. Housing authority were made available by congress in June 1940 for use in providing homes for workers in defense industries. The subsidies and local tax exemption were necessary because it was impossible to reduce building costs sufficiently to bring the rental within the reach of low-income families. The reduction of interest rates and of builders' profits did not cut enough cost. Under the entire program 172,728 units were built in 262 localities. Contracts outstanding with local authorities covered 20,516 units which were deferred during World War II because of the shortage of building materials. The contracts covering the active and deferred projects exhausted the financial authorizations available to the Federal Public Housing authority for low-rent housing.

Between Jan. 1, 1937, and Dec. 1941, FHA, under title I, insured mortgages secured by 35,359 new single-family homes valued by FHA between \$8,000 and \$10,000; 167,497 new single-family homes with FHA valuations between \$6,000 and \$8,000; 354,242 new single-family homes valued between \$4,000 and \$6,000; and 178,110 new single-family homes valued at less than \$4,000. (Of the 33,468 title I loans insured from 1938 through 1941, 33,234 were for new homes valued at less than \$4,000 and 234 were for homes valued at from \$4,000 to \$6,000.)

Under the rental housing program of title II (the war housing rental program under sec. 608 was not in operation until 1942) the FHA insured, between Jan. 1, 1937, and Dec. 1941, 340 mortgages comprising 35,715 family units. These were distributed in monthly rental groups as follows: 1,750 with rentals of less than \$35; 12,393 with rentals of \$35 to \$50; 10,322 with rentals of \$50 to \$60; 8,643 with rentals of \$60 to \$75 and 2,607 with rentals of \$75 or more. (Gross rental included, in almost every case, heat and janitor service and in many cases utilities.)

It was estimated that 719,000 private nonfarm family units costing less than \$10,000 were built with uninsured financing in the years 1939-41.

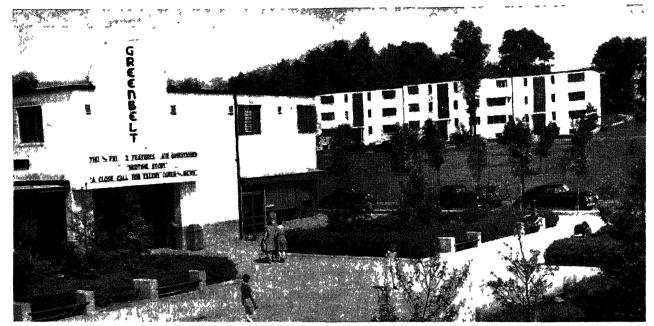
Table I shows the volume of homes constructed in the first nine years of the decade and their total cost:

Table 1.—Estimated Value of Work Put in Place,
Estimated Number and Construction Cost of New Nonfarm Dwelling
Units in the United States, 1937–45
(Number of dwelling units in thousands; dollar volume in millions of dol

•						•							Estimated value of
											Uni	ts started	work
Year											Estimated number	Estimated construction cost	put in place
1937 .							٠				336	\$1,382	\$1,465
1938 .											406	1,584	1,546
1939 .											515	1,948	2,190
1940 .											603	2,299	2,560
1941 .											715	2.841	3,244
1942 .											497	1.678	1.915
1943			-								350	979	1,335
1944	•						÷				169	529	725
1015	:	:	-		-						225*	988*	741

*These data represent a review of previous Bureau of Labour Statistics estimates for nonfarm dwelling units started after Jan. 1945, to account for lapsed building permits and for the lag between the issuance of building permits and the actual start of construction. These adjusted data were believed to be comparable with figures for earlier

Sources: Units started and estimated construction cost from National Bureau of Economic Research and Bureau of Labour Statistics; value of work put in place from Bureau of Foreign and Domestic Commerce, Construction and Construction Materials, Jan. and July 1946 issues.



Shopping centre and motion picture theatre integrated with the architecture of the federal housing project at Greenbelt, Md.

It was interesting to note that FHA began its operations in a period of financial stress and continued in years of increasing prosperity. Therefore, in nearly 12 years of experience only 4,083 of 1,144,440 home and housing project mortgages insured by FHA, for building and buying homes under title II, were acquired by FHA from lending institutions in exchange for government-guaranteed debentures. On March 31, 1946, FHA had sold with very little loss all of these 4,066 individual homes and 17 large-scale projects which it had taken over.

The lower cost homes built between 1937 and 1941 did not necessarily reflect building-cost economies. They frequently represented a cut in the size and quality of the house. The reduction in cost was often obtained through omission of garages, porches, cellars, fittings or attic room finishing and through drastic reduction in room sizes.

This practice was continued in the latter half of the decade, when all home building was restricted to lower cost housing for war workers, military personnel and veterans. During World War II critical material was allocated to housing through priorities issued to builders in overcrowded military and production areas. Builders were restricted in price, size of home and number of units.

In Sept. 1941, when the priorities system was instituted, the cost limitation was \$6,000. It was raised in Nov. 1944 to \$8,000 for that portion of the war housing program known as H-2 (housing to relieve situations of extreme general hardship). The \$6,000 ceiling remained in effect throughout World War II for the H-1 portion of the program (housing for in-migrant war workers). Housing to relieve individual hardship and to take care of returning veterans, known as H-3 housing, had no ceiling. There were 924,801 permanent units started with priority assistance by private enterprise (832,529 H-1 units; 30,672 H-2 units and 61,600 H-3 units) and 276,447 by public financing between July 1, 1940, and Sept. 30, 1945.

To stimulate privately financed building during World War II congress enacted the National Housing act's title VI, guaranteeing 90% mortgages on home loans and authorizing a limit of \$1,800,000,000 for insurance. FHA insured loans on approximately 450,000 new dwelling units under its provision. On March 31, 1946, 5,416 prop-

erties had been acquired by the FHA from the lending institutions after foreclosure, of which 1,944 had been sold with an estimated charge of \$537,595 against the War Housing Insurance fund. The balance of 3,472 remained with FHA.

When war-housing production began, there were 16 agencies in the federal government dealing with housing. They tangled and wrangled in the scramble for production. Chaos was rampant. In an effort at improvement Pres. Franklin D. Roosevelt issued an executive order on Feb. 24, 1942, establishing the National Housing agency (NHA) consolidating the nonfarm housing functions of the federal government in a single agency (See below).

Rocketing Prices.-The rising cost of homes did not deter home-buying. People had money and wanted to buy. But many who did not want to buy were forced to buy because of the housing shortage. In Nov. 1945 there was only a 1% vacancy in dwelling units on the sale or rental market in urban areas and 2% or 803,000 units for the country. Construction of new homes had been curtailed by war restrictions, so a large proportion of purchases were of old homes withdrawn from the rental market. A substantial number of purchases were forced. Competitive bidding by prospective owners caused sharp price rises. According to surveys of the bureau of labour statistics, between April 1940 and Oct. 1944 the proportion of urban residential housing occupied by owners rose from 41% to 47%, an increase of 15%. In 122 congested cities there was a median increase of 28%, with one-fourth of the cities having increases of more than 36%. The supply of single-family rental dwellings was reduced by as much as one-third in less than a two-year period in some large cities.

Table II.—Average Percentage Increases in Prices of Homes and Home Sites Spring 1940 to Feb. 1946

	Homes	Home Sites	tes
	Under \$6,000 \$6,000-\$12,000	Raw Land Lot	ts
All cities	65.1 57.0 66.0 61.7 64.9 55.9	60.1 61. 68.7 64. 57.9 61.	8

The sharp increase in sales price, combined with forced purchases of homes by persons not in a financial position to assume the cost of home ownership or by persons whose residence in a community might be only temporary, created a costly, unstable and insecure type of home ownership for many families.

Mortgages and HOLC.-Mortgage foreclosure during the decade, 1937-46, was not the acute problem that it had been in the depression years immediately preceding the decade. Between June 1933 and 1936, the Home Owners' Loan corporation had refinanced the loans on homes of more than 1,000,000 distressed U.S. families, mortgages which were in arrears on the average nearly 2 years. They were given a new chance to save their properties through low-interest loans, payable over a period of 15 years. By taking more than \$3,000,000,000 in defaulted mortgages, the HOLC had helped stabilize the home-mortgage market and checked the downward spiral of property values. In exchange for frozen mortgages, the corporation had disbursed nearly \$1,000,000,000 to banks and trust companies and hundreds of millions to savings and loan associations, finance and mortgage companies, insurance companies and individual mortgage holders.

At the end of 1945 the corporation was more than three-fourths liquidated with its \$3,500,000,000 total investment now down to \$853,951,000.

Condition of Homes.—According to reports of the bureau of the census, some improvement was shown between 1940 and 1945 in the average condition and facilities of homes in the United States. Occupied dwelling units increased about 2,750,000 in this period. The estimated number of occupied dwelling units in Nov. 1945 was 37,600,000. The trend to the cities was emphasized by an increase in more than 3,000,000 urban occupied units and a decrease of nearly 800,000 rural-farm occupied units. Rural nonfarm units increased by only about 400,000.

In this period the physical condition of homes in the United States improved. In 1945, 33,258,000 or 89% of the occupied dwelling units were not in need of major repairs, with 92%, 87% and 78% for urban, rural-nonfarm and rural-farm respectively. Corresponding percentages in 1940 showed that 82% of the occupied units were not in need of major repairs, with 89%, 78% and 67% for the urban, rural-nonfarm and rural-farm areas.

In 1945, 23,438,000, or 71%, of the 33,258,000 dwelling units needing no major repairs contained both a private bath and a private flush toilet. Of all urban occupied dwelling units, 78% contained both private bath and private flush toilet and needed no major repairs, while 52% of the rural-non-farm dwellings and 15% of the rural-farm dwellings were reported in this class.

Almost 1,000,000 of the 4,342,000 units needing repairs contained both a private bath and a private flush toilet. In this group were 3% of all urban units, 2% of the rural-nonfarm units and 1% of the rural-farm units.

Of the 37,600,000 occupied dwelling units in 1945 more than 24,500,000, or 65%, had a private bath or shower in the structure for the exclusive use of the occupants of the dwelling unit. The corresponding figure for 1940 was less than 20,000,000, or 57%. A private flush toilet in the structure was reported for 69% of the occupied dwelling units in the United States in 1945, as compared with 60% in 1940.

Although there were fewer rural-farm occupied dwelling units in 1945 than in 1940, 1,000,000 more of these rural-farm homes had electric lighting.

A sizable proportion of families remained in poor, illconditioned, overcrowded, unsanitary homes. As World War II neared its end, peacetime social objectives again

came to the fore, and consideration was given to means of clearing urban and rural slums and rehousing the illhoused. The Wagner-Ellender-Taft bill, cited as the "General Housing Act of 1945," was introduced in congress on Oct. 29, 1945. It passed the senate, but died in committee in the house. The bill was based upon the assumption that private enterprise would need assistance to enable it to build for that portion of the middle-income market not previously served and to rebuild outworn sections of cities; and that public funds would be necessary to subsidize the construction of homes for low-income families. The bill was an inclusive housing measure providing for (1) the establishment of a permanent National Housing agency (since the existing NHA had been established under the President's War Powers act and would cease to exist six months after the duration); (2) the use of federal funds in research, market analysis and local planning; (3) amendments to existing aids to privately financed housing; (4) new aids to privately financed housing for families of lower income (these included supplemental mortgage insurance for home owners of lower income and provisions for insurance for mutual ownership and rental housing); (5) insurance for investment (yield insurance) for rental housing for families of moderate income; (6) provision for loans and grants to enable private enterprise to redevelop slum and blighted urban areas; (7) aid to localities for low-rent housing (a continuation of the Wagner-Steagall act program); (8) aids to housing on farms and on rural areas; (9) provisions for disposition of permanent war housing and other federally owned housing with preference to servicemen and veterans and (10) provision for periodic inventory of housing needs and programs.

The bill's failure was a keen disappointment to those who were concerned with the provision of homes for families in income levels not adequately served before World War II, and with the elimination of ugly and costly slum areas. The provision for a permanent NHA and a continuation of the public housing program raised strenuous opposition from the National Association of Real Estate Boards, the National Association of Home Builders, the chamber of commerce and the Producers council. A separate attempt to create a permanent National Housing agency through the president's authority to reorganize executive departments was rejected by both houses.

(D. RN.)

NHA and the Vet Problem.—The various government agencies which had been established to combat the depression and stimulate home building were brought into the National Housing agency, established by executive order of the president in Feb. 1942. Operations were streamlined through three major units—the Federal Housing administration, the Federal Home Loan Bank administration and the Federal Public Housing authority. Strict controls had to be placed on materials used for housing, because the same materials were needed for direct production of weapons for war, and housing was limited almost entirely to meeting the needs of migrating war workers.

This move caused hardships on the housing industry; it meant restrictions and regulations in what always had been a free market. It meant denying the privilege of building a home to many who, with war incomes, were able to pay for one for the first time in their lives. It forced suspension of the low-rent slum clearance program. And yet not enough materials could be supplied to give even all war workers good homes. Nevertheless, the program took care

of 4,000,000 war workers who migrated from all parts of the country to take jobs on production lines. Housing programs were carried out in 1,200 communities. In all, more than 1,900,000 quarters for war workers and their families were provided through new construction and conversion after July 1940. When the war housing job ended, more than 1,000,000 units had been provided by private financing at an investment of approximately \$5,600,000,000, much of it protected by FHA insurance. Public financing had supplied more than 840,000 units at a cost of \$2,300,000,000.

Through this war housing program, a core of the building industry was kept active in meeting imperative demands and in preparation for the postwar job. On Oct. 15, 1945-two months after the end of World War II-War Production board order L-41, the war measure which restricted nonresidential construction and limited residential building to quotas established by the National Housing agency was lifted, and sales price ceilings and priorities for materials were abolished. The result was a boom in nonresidential construction, chiefly at the expense of home building. War-curtailed building materials producers and distributors were not yet ready to meet the tremendous demand. Many home builders found themselves unable to compete for scarce materials against commercial and industrial builders. Residential construction declined accordingly.

Meanwhile, the long-standing housing shortage in the United States became a housing emergency. As of Oct. 1, 1945, 1,200,000 families were living doubled up with other families. The number of men leaving the armed forces in one month exceeded the largest number of houses the United States had ever built in one year. Vacancy rates in most cities and towns had dropped to alltime lows. It was estimated that something near 3,000,000 new dwelling units would be needed by the end of 1947 only to keep the shortage from getting worse.

On Dec. 31, 1945, title V of the Lanham act was amended to provide \$191,900,000 to aid in providing reuse war housing to communities and educational institutions for veterans' accommodations. (Another \$253,727,000 was appropriated under the same act on April 9.)

With the plight of homebuilders steadily growing worse the government began to restore controls over housing at the turn of 1946. The Civilian Production administration issued priority regulation 33 on Jan. 15; this established a priority system (to be known as "HH priorities") covering 11 critical materials applicable to the construction of veterans' housing costing \$10,000 or less or renting for \$80 or less a month per unit. Subsequent amendments raised the number of building materials under HH priority ratings to include almost every type of scarce material.

To co-ordinate these individual approaches to the housing emergency, and to launch a full-scale attack on the veterans' housing problem, the Office of the Housing Expediter was created by executive order 9686 on Jan. 26, 1946. The housing expediter became administrator of the National Housing agency on Feb. 6.

The housing expediter, Wilson W. Wyatt, was authorized to formulate plans to provide for an increased supply of housing for veterans of World War II. On Feb. 7 the expediter submitted the Veterans Emergency Housing program to the president, who approved it the following day. The program aimed at placing under construction 2,700,000 homes and apartments by the end of 1947—1,200,000 in 1946 and 1,500,000 in 1947. The first year's

goal included 700,000 conventional houses, 250,000 permanent prefabricated homes and homes assembled on the building lot from prefabricated parts and materials, and 250,000 temporary units (200,000 temporary re-use war housing and 50,000 trailers). The goal for 1947 included 900,000 conventional homes and 600,000 permanent prefabricated homes and homes assembled on site from prefabricated parts and materials.

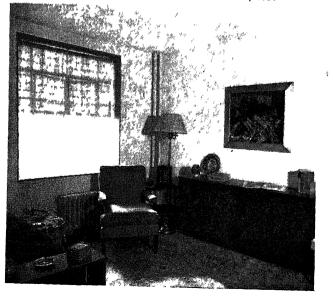
The program launched its first attack upon lagging production in materials, and the diversion of scarce materials to high-priced homes and nonresidential construction. The first order issued by Wyatt under the new program was Veterans Emergency Housing program order 1 on March 26. It called for deferment of new, unessential, nonresidential construction to ease the strain on the many critically short building materials and thus make more of them available for veterans' housing, restricted all new housing to that covered by priorities at \$10,000 or less and required authorization to start any major construction work.

At the same time a campaign for enlistment of community aid was started. Taking a cue from the housing committees appointed in a small number of cities, Wyatt sent letters to the mayors of the major population centres of the country beginning on March 26, requesting them to establish emergency housing committees. These committees were to plan and direct all phases of the local attack on community housing problems. They were to be representative of veterans, local government, builders, materials suppliers and financial, real estate, minority and other business and public interest groups. By Dec. 31, 734 such committees had been organized.

To aid construction of both rental units and moderatelypriced housing, a channelling order was issued on April 21, 1946, requiring 25% of all HH authorizations reserved for rental housing, and 50% of both rental and sales construction to be priced at or below local dividing lines. These dividing lines were based on the local current cost of producing a minimum acceptable two-bedroom house, as determined by FHA standards.

To break one of the building industry's chief bottlenecks-lumber-the National Housing agency reached an agreement with the department of agriculture on May 16 to (1) build access roads to hitherto inaccessible govern-

Typical living room in "Queensbridge Houses" a large housing project in New York city, opened Oct. 25, 1939



ment timber stands and thus increase the U.S. lumber supply, (2) obtain forest service preference for bidders for national forest timber whose output would result in maximum production of materials needed for the Veterans Emergency Housing program and (3) overcut timber beyond normal yield for an emergency period in certain localities of the south and west. The construction or improvement of almost 2,700 mi. of access roads under this agreement was expected to add more than 2,000,000,000 ft. of timber to the nation's lumber supply by the end of 1947. By Sept. 30, 1946, about half of the roads had been started and a substantial share completed.

The Veterans Emergency Housing act, passed by congress on May 22, 1946, reaffirmed the powers granted the housing expediter by the president. It (1) authorized \$400,000,000 for premium payments to stimulate production of critically needed materials; (2) restored title VI of the National Housing act to operation by adding \$1,000,-000,000 to the amount of home mortgage loans made by private lending institutions which the FHA might insure under this title, while permitting the FHA to insure mortgage loans up to 90% of the "necessary current cost" on the property involved, including land; (3) authorized the housing expediter to guarantee markets for prefabricated houses and new types of materials; (4) provided \$15,000,000 for the building of access roads; (5) permitted the sum of \$5,400 for a mortgage loan on a single-family house with a provision that it could be raised to \$8,100; (6) ordered preference on all new construction built with FHA-insured mortgages under title VI occupancy to be given to veterans and servicemen and (7) authorized the housing expediter to control exports of housing materials. One of the major provisions which the housing expediter had requested in his Feb. 7 report to the president—ceiling prices on old housing and on building lots in urban areas —was not included in this bill.

The first premium-payment plan authorized under the Veterans Emergency Housing act became effective June 1, 1946. It set up a system of incentive payments to manufacturers of structural clay products—one of the most critically short building materials; under it producers would be paid \$5 for each 1,000 standard brick equivalents manufactured in excess of established quotas By Nov. 1, 16 premium-payment plans were in effect, covering the major critical building materials.

By midyear it was apparent that authorized nonresidential construction was draining an undue amount of critical building materials away from home building. At the request of the housing expediter, the Civilian Production administration ordered its field offices on May 30 to reduce the dollar value of nonhousing construction authorizations by two-thirds for at least the next 45 days to keep building in line with materials supply. Permitted nonhousing construction was subsequently curtailed twice. Other actions followed swiftly in June: minimum construction standards and inspections by the FHA were established for all HH priority housing; production of every sawmill was brought under government control to boost construction grades of lumber and flooring reserves by more than 4,250,000,000 ft.; \$2,000,000 was made available to the secretary of agriculture for constructing access roads; an emergency distribution system for steel was set up. By the end of the month some 1,900 local apprentice training programs for homebuilding workers had been placed in operation.

July, August and September saw further amplification of the Veterans Emergency Housing program. In July, 26 army and navy installations were turned over to the pro-

gram through the War Assets administration, 21 materials were ordered set aside for housing, army and navy nail supplies were drawn upon to supply home builders and super-HH priorities were established for a 30-day period to rush completion of 100,000 temporary housing units during the next three months.

The major action of August, however, was the announcement of the "big push" to get more materials into veterans' housing, so that more homes could be completed before winter set in and more new home construction get under way. The "push" consisted of (1) setting aside a much greater proportion of scarce building supplies for housing; (2) adding many critical building items to the list of materials under priority control; (3) obtaining stricter compliance by closer inspection of the sale of building materials and (4) cutting the volume of nonhousing construction sharply with a more rigorous review of the essentiality of such construction. "Set-asides" were increased to make it possible for priority holders to obtain needed building materials more rapidly. This was done not only by increasing the proportion of material which had to be held by dealers for priority orders, but also by requiring the dealer to hold this material until a priority order was presented. Formerly, the dealer had been required to "set-aside" this material for only 21 to 30 days for priority orders, after which time he could sell to any purchaser.

By Dec. 31, 1946, a recapitulation of the results of actions taken by the Veterans Emergency Housing program showed both a sharp increase in building materials and a near record-breaking rate of homebuilding. In spite of the obstacles encountered by the program-work stoppages in basic industries, the time required to obtain needed legislation, uncertainties about the fate of price control and failure of prefabricated housing to meet anticipated production goals—the record was impressive, as follows:

Total Units Begun	1,003,600
New permanents	670,900
Conversions	64,500
New traffers	48,000
Temporaries	191,000
Other public bodies, schools	29,200
Total Units Completed	661,900
New permanents	453,800
Conversions	45,300
New trailers	48,000
Temporaries	101,900
Other public bodies, schools	12,900

Gains in building materials production in many instances at least paralleled the fine record of armaments output during World War II, with production of most critical materials in the final months ranging from 50% to 100% higher than at the beginning of the year. By August, the number of workers employed in new on-site construction had risen to 1,800,000 from January's 871,000. Workers engaged in building new homes in September represented a 160% increase over January.

During Dec. 1946, the Veterans' Emergency Housing program underwent considerable revision. Wyatt resigned, and the Office of the Housing Expediter and that of the administrator of the NHA were separated. Raymond M. Foley was appointed administrator, National Housing agency, and Frank R. Creedon, housing expediter. Several restrictions were lifted: the priority system, the \$10,000 sales ceiling on new homes and the confining of new homebuilding for personal occupancy of veterans. The limita-



Prefabricated house in San Francisco, Calif., 11 minutes after construction began, in March 1945. Setting up was completed in 35 minutes

tion on nonresidential construction was modified, and the ceiling of \$80 for rental of new projects was changed to an average monthly rental of \$80. The Federal Housing administration was granted another \$1,000,000,000 of insurance authorization to be used primarily for rental housing. The guaranteed market plan, export controls, and apprentice-training and technical research programs were to be continued. In announcing the new program, Pres. Harry S. Truman stated that the main point of emphasis would be rental housing.

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Great Britain.—In the two years preceding the outbreak of World War II the housing movement in Great Britain, which had started soon after the armistice in 1919, continued with increased vigour. A vast building industry had been developed, capable of carrying out mass housing developments on a hitherto undreamed of scale. The building industry was in fact capable of producing more than 300,000 new houses each year.

The outbreak of war in Sept. 1939 brought the housing movement to a standstill. Only those houses which were actually under construction were completed. For the rest, in the general transition from peace to war both building materials and building labour were necessarily diverted to other aspects of the war effort. Confronted by the impressive achievements in housing between the wars, even well-informed people showed a tendency to imagine that Britain had solved its housing problem. The mass evacuation of children from the great cities to safer parts of the country which followed immediately upon the outbreak of war revealed, however, that the facts were quite otherwise. Although it is easily possible to exaggerate, it was nevertheless true that the country people were shocked at the poor standards of health and cleanliness prevailing among the children from the crowded city areas.

On Sept. 7, 1940, the luftwaffe first attacked London in great strength. Huge fires in the docks confirmed that

the East End had been the special target, and there thousands of little houses were utterly destroyed although the raiders had left their imprint on every part of the vast metropolis. Psychologically, the continued bombing of London, the devastating raid on the city area on Dec. 29, 1940, the concentrated raid on Coventry and the later terror raids on the "Baedeker cities" such as Bath and Exeter produced astonishing results. The more the towns and cities of Britain were devastated by the Germans, the more splendid became the vision of the new towns which would rise in their place. Fortunately there was on hand a document of profound significance to give pattern and coherence to what otherwise might merely have been wellmeant, but vague aspirations. Just at the outbreak of war, H.M stationery office had published the Report of the Royal Commission on the Distribution of the Industrial Population, a commission which sat under the chairmanship of Sir Montagu Barlow, and whose report was therefore known as the Barlow report. The royal commission had had its genesis in Sir Malcolm Stewart's third report as commissioner for the special areas-those areas of unemployment and social decay such as South Wales, Tyneside, Durham and Clydeside. Sir Malcolm had pointed to the overgrowth of London as the prime factor in the industrial decay of these regions. The Barlow commission confirmed this and declared that London was a menace, economically, strategically and socially, to the rest of Great Britain. It recommended a policy of decentralization of population and industry into new towns and into extensions of smaller towns.

For the first time a minister, Lord John Charles Reith, was appointed who had as his special responsibility the consideration of the steps that would be necessary to reconstruct Great Britain physically after World War II. He was designated minister of works and planning. Later the government created a new ministry, the ministry of town and country planning, to which W. S. Morrison was appointed as first minister. Lord Reith during his brief tenure of office appointed two committees, one under Lord Justice Leslie Scott to consider the future of rural land use, and the other under Justice Augustus Andrewes Uthwatt to consider the question of compensation and betterment. Lord Justice Scott's committee underlined the recommendations of the Barlow commission in favour of decentralization and pointed to the need for a diversity of industry in the agricultural areas and suggested that in the smaller country towns and villages industries ancillary to agriculture should be established. Justice Uthwatt's committee submitted two reports: an interim report was designed to discourage speculation in land values and recommended that purchase of land by local authorities and the state for reconstruction purposes should be based on its value as at March 31, 1939; and in its final report the committee recommended that the government should buy up the development rights of all the undeveloped land on the fringes of the towns of Britain, that compensation should be paid to the landlords who suffered a loss in value as a result of planning, but that those landlords who gained by planning in that the value of their lands improved should pay on the basis of a five-yearly valuation a tax on "betterment." Since planning did not alter values but merely redistributed them, it was felt that the money paid out in compensation should more or less equal the money collected for betterment. Legislation to this end was in fact introduced into parliament, but in the face of the revolt of the land-owning interests, the relevant clauses were dropped from the bill. When the Labour government was returned to power in 1945, it made reference to com-

pensation and betterment in the king's speech; toward the end of 1946 the legislation dealing with this aspect was introduced into parliament and formed the subject of keen controversy.

In the spring of 1943 Winston Churchill announced the desire of the government to provide houses as quickly as possible after World War II and described in considerable detail a new prefabricated temporary house-popularly named the Portal house, after Lord Portal, then minister of works. About £2,000,000 was spent on research into the Portal house, but it was never produced. The scheme, however, did turn the minds of the builders to the possibility of a departure from traditional building methods and many new types of houses did emerge: the Arcon house, the Uni-Seco house, the Tarran house, the British Iron and Steel federation house, the Weir house, the Atholl house and the aluminum house. All of these, except the last, were the product of private enterprise. The aluminum house was the product of the ministry of aircraft production, later merged in the ministry of supply. Intensive study was given to the question of the equip-

By the end of Nov. 1946, 80,000 temporary houses had been completed and 18,500 were building in the United Kingdom. In the meantime the ministry of health had set up a committee under Lord William Dudley to examine desirable postwar standards for permanent housing. The Dudley report at the end of World War II corresponded to the Tudor-Walters report after World War I. It recommended a vast increase in the space standards of working-class housing—a minimum floor area of 950 sq.ft., with an additional 90 sq.ft. to be provided in the form of a outhouse or workshop.

During the war, too, great consideration was given to the house-work-recreation aspect of building. Ideally, it was seen that a house should be within walking distance of work and also within walking distance of facilities for shopping, entertainment, worship, recreation and all the other activities of a normal fully-developed community. This received its practical application in two ways. In the County of London Plan by Prof. Sir Patrick Abercrombie and J. H. Forshaw, the old communities in London, which had been swallowed up and to some extent lost in London's development, were restored by the process of re-creating neighbourhood units with an average popu-

Temporary prefabricated dwellings built to replace some of the 200,000 houses destroyed by bombs in Greater London during World War II

lation of 10,000 persons, each unit to be divided from the others as far as possible by belts of open space. That was taken to its logical conclusion in the plan, also by Abercrombie, for Greater London, in which the process of decentralization inherent in the County of London Plan was carried a stage farther and a project developed for the creation of 10 to 12 new towns beyond the Greater London green belt. The new towns movement, which had its origin in the Town and Country Planning association, in the work of Sir Ebenezer Howard and F. J. Osborn, and in the garden cities of Letchworth and Welwyn, thus achieved official recognition, and in 1946 a New Towns act was passed by parliament, having been introduced by the minister of town and country planning, Lewis Sılkin. This provided machinery whereby corporations appointed by the minister could be created to carry out the work of constructing new towns. It also provided money for the purpose and stipulated that the state corporations should transfer their responsibility when the towns had reached an adequate stage of development to local authorities democratically elected by the inhabitants of the towns themselves. By the end of 1946 corporations had been appointed in England for one of these new towns (Stevenage), others being under consideration, while in Scotland, the secretary of state for Scotland, who held similar powers under the act, was proceeding with the construction of two new towns, one in the west (East Kilbride) and the other in the east of the country (Lochgelly). It was the first recognition by any government that housing by itself was not enough, that the creation of industrial factory estates by themselves was not enough, but that the two had to be integrated with all the facilities necessary for a full social life. (See also Building and Construction Industry; Cen-SUS DATA, U.S.; FEDERAL WORKS AGENCY; LAW; MUNICIPAL GOVERNMENT; PUBLIC HEALTH ENGINEERING; WASHINGTON.

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Housing Administration, Federal See Housing.

Housing Agency, National See Housing.

Housing Authority, U.S. See FEDERAL WORKS AGENCY; HOUSING.

Howland Island

See PACIFIC ISLANDS, U.S.

Hoxha, Enver

Hoxha (1908—), Albanian statesman, was a teacher of French before the Italian invasion of Albania in April 1939. He thereupon joined the Albanian resistance forces and took command of a partisan army when German troops landed in Albania to help Mussolini consolidate his tottering position in the Balkans.

After Albania's liberation in late 1944, Hoxha assumed the premiership of Albania, heading a partisan or popular front government. Opposition to his assumption of power immediately sprang up from conservative elements in Albania on grounds that the new government was a soviet puppet. Politically, Hoxha enjoyed warm relationships with the E.A.M. (the leftist National Liberation Front) in Greece and Marshal Tito's regime in Yugoslavia. In Aug. 1946, Hoxha went to the Paris peace conference and asked for a further reduction of Italian armed forces, extensive reparations from Italy and the right to sign the Italian treaty. He clashed with the Greek delegates over the Greek demands for slices of Albanian territory.

On Nov. 8, 1946, the U.S. severed its political relations with Hoxha's regime on grounds that the latter had refused to accept the validity of all prewar Albanian treaties with the U.S. Hoxha charged that the U.S. had obstructed negotiations by its peremptory demands.

Hughes, Charles Evans

Hughes (1862-), U.S. jurist, was born April 11, 1862, in Glen Falls, N.Y., the son of a Baptist minister. He attended Colgate and Brown universities and Columbia university's law school. Admitted to the bar in 1884, he practised law until 1905, except for a brief period (1891-93) when he taught at Cornell university. His introduction to politics came in 1905, when he conducted investigations of gas and insurance companies for the New York legislature. He was elected governor of New York on the Republican ticket in 1907 and was re-elected in 1909. In Oct. 1910 he resigned to become associate justice of the supreme court. Resigning from the court in 1916, he waged an unsuccessful campaign against Woodrow Wilson as the Republican presidential candidate. From 1920-25 he served as secretary of state under Pres. Harding, and from 1926-30 as member of the permanent court of arbitration at The Hague. On Feb. 14, 1930, in spite of the opposition of many senators and of the liberal press, he was appointed chief justice of the supreme court. On the court he was associated with neither the liberal nor the conservative wing; he sustained some of the New Deal measures (NRA, TVA, NLRB, etc.) and opposed others (AAA, SEC), and

generally voted with the liberals in civil liberty cases. On June 2, 1941, Justice Hughes retired from the court. When the chief justiceship was again vacant in May 1946, he declined Pres. Truman's offer.

Hughes, Howard Robard

), U.S. aviator and motion-picture Hughes (1905producer, was born Dec. 24, 1905, in Houston, Tex., the son of a wealthy manufacturer. He was educated in private schools, at Rice institute in Houston, and at the California Institute of Technology. At 18, upon the death of his father, he inherited an estimated \$17,000,000. With this capital, Hughes decided to produce motion pictures. To the astonishment of seasoned Hollywood producers, he released a series of pictures—the first in 1927—that were immediate financial successes. The best known was Hell's Angels, which starred Jean Harlow. In 1934 he incorporated Hughes Aircraft company to build experimental speed planes, and set new speed records for transcontinental and transoceanic flights. In recognition of his achievements, he received the Harmon medal for 1936 and was named the outstanding U.S. aviator of 1938 by the National Aeronautics association. In 1940 he returned to Hollywood and produced a controversial film, The Outlaw, which was banned by the censors and not released for distribution until 1946. During World War II he devoted most of his time to aviation, producing cargo and troop transportation planes. Shortly before a serious crash in an experimental plane on July 7, 1946, he had completed designs for the largest plane ever constructed to that date—a flying boat to move troops and equipment.

Hull, Cordell

Hull (1871-), U.S. statesman, was born Oct. 2, 1871, in Overton (now Pickett) county, Tenn., and graduated from the Cumberland university law school in 1891. He served as a captain of infantry in the Spanish-American war. First elected to congress in 1907, he served until 1931, except for a brief interval from 1921-23. He was elected

Secretary of State Hull and Foreign Commissar Molotov at the Moscow airport prior to the Allied conference which resulted in the pact of Moscow, announced Nov. 1, 1943



to the senate in 1931 but resigned in 1933 to become Pres. Roosevelt's secretary of state. Internationally his name became closely associated with the "good neighbour" policy in South America and elsewhere; he advocated reciprocal trade agreements and the peaceful arbitration of disputes. In Aug. 1943 Hull accompanied Pres. Roosevelt to Quebec, where he participated in the British-Canadian-American conferences. Two months later he travelled to Moscow to confer with Anthony Eden, British foreign secretary, and Vyacheslav Molotov, soviet foreign commissar. This was the first meeting of statesmen of the three countries and foreshadowed the important conferences that followed. In failing health, he resigned on Nov. 27, 1944, as secretary of state. Hull was awarded the Nobel peace prize for 1945.

Humanism

See PHILOSOPHY.

Human Nutrition and Home Economics, Bureau of

See Agricultural Research Administration.

Humbert II

King Humbert II of Italy (1904-), was born Sept. 15, 1904, the son of Victor Emmanuel III. His education emphasized military arts and sciences and included a period at the Royal Military academy in Turin. He rose rapidly from the rank of lieutenant at 18 to colonel at 26. Because of his alliance with Italian fascists, he was the object of an attempted assassination in Brussels in 1929. In 1930 Humbert married Princess Marie José, daughter of King Albert of Belgium. During World War II, Prince Humbert served as commander of Italy's army of the Alps, with the rank of full general. After the fall of Rome on June 4, 1944, in the hope of pacifying antimonarchist sentiment, he was designated lieutenant general of the realm with all royal powers, King Victor Emmanuel retaining for himself only the title of king of Italy and head of the house of Savoy. On May 9, 1946, Victor Emmanuel abdicated in a final attempt to save the royal house, and Prince Humbert was proclaimed King Humbert II. The act was futile, however, for a plebiscite resulted in the proclamation of the Italian republic on June 3. The royal family, including Humbert, went into exile in Portugal.

Humour, War

The decline of humour accompanied the rise of totalitarianism. But as fanaticism and World War II wiped out wit and humour directed against the party and party officials of Italy and Germany, a contrary development took place within the democracies.

In the United States, government officials and government boards and bureaus co-operated in exposing themselves to fun and ridicule, realizing that morale would rise if people could laugh at the things that were annoying and hurting them. Draft and ration boards, OPA, induction centres, the war department, etc., opened their files, and Dear Sir appeared with laugh-provoking letters received by them.

With the growth of the citizen army, humour developed in the ranks. Cartoonists and writers sprang up among the soldiers and gave vent in positive terms to their gripes and grievances. The cartoon-strip figures of Bill Mauldin's "Joe and Willie" had a touch of Charlie Chaplin pathos that called forth sympathy as much as laughter. For example, one foot-tired dog-face was pictured saying to another: "Do retreatin' blisters hurt as much as advancin' blisters?"

Millions of soldiers identified themselves with George Baker's droopy draftee, "Sad Sack," to whom troubles always came. There was the strip on reveille—Sack, awakened by the bugle, jumps out of bed, thrusting legs into pants as he dashes downstairs. He reaches roll call dressed, but breathless, only to hear: "Fall out." Shut-eyed on his feet, he droops around for hours till assignment—personification of the "hurry-up-and-wait system" of army life.

Yank, Stars and Stripes and about 2,000 other army and navy papers carried these and other cartoons: Milton Caniff's "Male Call," with beautiful racy Lace, who preferred G.I.s to generals; Sgt. Leonard Sansone's "The Wolf," whose wolf-headed doughfoot was involved in semirisqué situations, and David Breger's brash nonconforming "Private Breger." These strips, together with the regular prewar comics, such as "Joe Palooka," the always noble champ fighter, were read by an all-high of about 70,000,000.

Among the books of humour published were: Marion Hargrove's See Here, Private Hargrove, an ingratiatingly funny view of the service; Theodore Pratt's pleasantly sentimental Mr. Winkle Goes to War; Harry Brown's Artië Greengroin, Pfc., which poked fun at the things the average soldier disliked; Bob Hope's I Never Left Home, telling with gags and grief the story of his entertaining the soldiers at the front; Barrie Stavis' Chain of Command, satirizing injustice to the non-coms; H. I. Phillips's Private Purkey's Private Peace—one of the few U.S. war books with humourous twist and political angle. As can be seen, a good part of written and pictorial humour took the form of soldier complaints against army life, red tape and lack of democracy in the fighting forces.

The movies, dispensing humour, remained more or less unaffected by the war. They held to old familiar lines and gave entertainment in routine escapist grooves. There were, to be sure, a sprinkle of so-called "service comedies"—of these, "See Here, Private Hargrove" was the most popular. Now and then a cartoon film brightened the scene, such as Walt Disney's "New Spirit," made for the treasury, which helped to laugh people into paying their staggering wartime taxes.

Like cartoons, radio comedy played a tremendous part in the war effort. Humour was recognized as a powerful weapon, and radio as an ideal field in which to use it. Fibber McGee and Molly had about 40,000,000 listeners every week. Jack Benny, Bob Hope and Charlie McCarthy had about the same number, while Ranald MacDougal's excellent "Man Behind the Gun" had only about 8,000,000. So messages of the greatest national importance were channelled through radio comedy.

Don Quinn built shows for McGee and A. S. Burrows for "Duffy's Tavern," around rationing, bond sales, etc. Radio writers made use of the wide field of topical jokes created by the war to stimulate fun and relieve tensions. As the daily life and relationships of all were wide open for laugh-provoking treatment, humour often developed out of actual experiences that were affecting millions of people in a similar manner. And, because of the need for unity, there was a decrease in derogatory humour directed against racial minorities.

Between their commercial broadcasts, entertainers toured the army camps and the fighting fronts. The armed forces radio service short-waved comedy shows to U.S. troops in India, Africa and the Pacific. They created "Command Performance," which delivered to the soldiers, through broadcasts and recordings, the songs, the patter, the hu-

mour and the contact with home that they craved. Most military leaders realized that laughter was often the difference between sending a fit man to the front or a psychopathic case to the asylum.

* *

In England, the civilian population was under constant attack. The people were being assaulted and destroyed, but they could not fight back like the troops in the field. The weapon that helped to sustain their morale was the mortar shell of explosive laughter. There was more spontaneous humour among the British civilians than the professional humorists could ever hope to portray.

After a bomb hit, a man stepped from the ruins of his home, blood streaking his forehead. A neighbour rushed up to him in great anxiety. "Don't worry," said the victim. "I've had high blood pressure for years, and this is the first time I've felt comfortable."

When the German planes flew over London, a woman called to her husband, "Hurry down to the shelter!"

"I can't. I'm looking for my teeth," he replied.

"Do you think," yelled the old woman, "them Jerries are dropping sandwiches?"

During a blitz, a cab driver stopped at a red light. A U.S. passenger exclaimed nervously: "Speed through to a shelter."

"What!" said the cabby. "And get a summons?"

Grimes produced a telling cartoon of an air raid warden standing at the entrance to a shelter, saying to a departing officer, "Well, come back if you feel nervous."

There was also humour in books. Heath Robinson and Cecil Hunt published How to Build a New World, showing how such oddities as the gas mask and the stirrup pump could be used for pleasures. Kay Grant, an Australian, brought out two books of ribald poetry, It's 'Ard to Stay Clean in the Country and It's 'Ard to Go Wrong in the Cactus. Michael Barsley, a radical with wit, authored Ritzkrieg, Alice in Wunderground and Common Man and Colonel Bogus. S. Evelyn Thomas, collecting jokes and humorous articles, brought out Laughs with the Forces, Laughs with the Navy and Laughs with the Home Front.

The forces themselves produced The Two Types by Jon (W. J. Jones), which appeared in the army news unit CMF (commonwealth military forces). There appeared Prune's Progress, adventures of Pilot Prune known throughout the R.A.F., and Behind the Spitfires, humorous sketches of aircraftsman Plonk and many others, all small publications because of the paper shortage.

The Tommies invented "Chad" and drew his bald head, criss-cross eyes and Durante proboscis on walls, washrooms and even in the officers' quarters with the comment, "Wot, no fags?" or whatever they most missed at the moment.

The R.A.F. created the gremlins with their aerodynamical-shaped heads, green tights, bobtailed frock coats and pointed shoes. They swarmed over British planes drinking gasoline from the tanks, biting control wires and putting ice on wings. Their pranks appealed to the U.S. fighters, and they became a part of the A.A.F.

There were a score or more of top-notch cartoonists who interpreted the British spirit and recorded the humours of the day. David Low, of liberal British tradition, drew political cartoons with wit and emotional force. He created "Muzzler," a combination of Hitler and Benito Mussolini, and "Colonel Blimp," summarizing the die-hard Tory, one of the most comically effective characters of the war.

Two and a half million readers daily watched George Strube's paper players in the *London Express*. His appealing "Little Man," taking all good-naturedly, was welcomed in the United States and other countries.

Bruce Bairnsfather, famous for "Old Bill" of World War I, continued to draw "Old Bill Does It Again" and "Old Bill and Son." Then, assigned to the U.S. air forces, he produced "No Kiddin'" and "Jeeps and Jests."

There were Leslie Illingworth, George Whitelaw, Fougasse (Cyril K. Bird), David Langdon, Pont (Graham Laidler), Leslie Grimes, J. F. Horrabin, Gilbert Wilkinson—all accomplished draftsmen, psychological analysts and students of affairs. Some reviewed world situations, others national news of the moment. But they all had this in common—a good-natured attitude toward themselves and the enemy, a casual acceptance of the tragedies to English life and an understatement of the horrors of war.

Note Thomas Derrick's cartoon. A man in dinner coat stands at the fireplace and, pointing to the wall covered with trophies of animal heads and nazi plane wings, smilingly says to a friend, "Big Game."

There was Osbert Lancaster's Scotch officer, in plaid pants and beribboned cap, remarking to a swank colonel in full regalia, "What I can't understand about the Boches is their passion for uniforms." There were many such sketches wherein the English treated the war as a sporting event and placed the enemy on a par with themselves, to be laughed at as they laughed at themselves, but to be treated with politeness, forbearance and tolerance.

There was a great deal of divertissement throughout the blitz and blackout. Theatres and motion picture houses stayed open most of the time. The E.N.S.A. (Entertainment National Service association) brought shows to both the troops and the factory workers. Entertainers, like others, were conscripted and sent to the front to amuse and relieve the soldiers.

The BBC "Variety Show" set everyone laughing with "Adolph in Blunderland" and "The Voice of the Fuehrer," while Noel Coward broadcast his satirical song, "Don't Let's Be Beastly to the Germans."

Radio comedy had a great triumph in I.T.M.A. (It's That Man Again) with the top-notch comedian, Tom Handley. Handley and his New Zealand-born script-writer, Ted Kavanagh, were the most fertile creators of character radio had produced. Others, such as Vic Oliver, George Formby, Gracie Fields, Binnie Hale, Bebe Daniels, Ben Lyon and the cockney, Jack Warner, dispensed laughter in rich and lavish portions over the BBC network. Bob Hope, London-born, delivered with a U.S. accent gag lines relished alike in both countries. Hal Block, in England from the United States, wrote shows for an Anglo-American series called "Yankee Doodle Doo."

The English and the people of the U.S. were having a great time ribbing themselves and their leaders. Meanwhile, inside Germany, Hitler had decreed death for political jokesters.

* * *

Russians had always been loud laughers. They laughed at funny situations and at the little ironies of life. During the war Alexander Trifonovitch Tvardovsky's epic poem, "Vasily Tyorkin," told with rollicking humour of the adventures of a typical private. Russians would laugh at their own shortcomings and at the failures of their bureaucrats as seen in a humorous magazine, Crocodile, the album of soviet wit. But during their life and death struggle against Germany, their humour was mainly armed and aimed against fascism.

Boris Efimov, and three cartoonists (Mikhail Kupriyanov, Porphyry Krylov and Nikolai Sokolov) collaborating under the composite name of Kokriniski, and thousands of artists in all the cities of the soviet union worked on posters which were displayed everywhere and changed continually. Some were humourous, some gay, some undisquisedly horrifying, but they all carried the stamp of emotional and intellectual intensity. There was a cartoon of a jackass and Josef Goebbels coloured alike, standing side by side, looking up with open mouths. The caption read:

"Which is which? Who can say?
There is no difference in their bray."

The Russians depicted their enemies with bestial faces. Goebbels was portrayed with ratlike body, slimy tail and grotesque head. Sometimes the nazis appeared as gorillas, sometimes as imaginary beasts, such as the man-eating monster, swastika adorned, hairy-armed, with clawlike hands and bloodstained nails, devouring the bones of the defeated while sitting on the skulls of Greece, France and Poland.

All the arts enlisted in the fight for survival and of each one, humour was a vital part.

A series of films was turned out on the exploits of some gnarled old peasants who constantly placed the *Herrenvolk* in humiliatingly ludicrous situations.

Russian entertainers were at all the fronts and carried on under the fire of German guns. The Russian soldiers were adept at creating their own amusements. Gathered around low fires, groups of Red army men, wearing furlined shathas and felt boots, stamped the ground to the rhythm of harmonicas. With congealing breath, they sang rough verses or recited chastushky, the timely couplets of witty commentary on the progress of the war that the Russian poets delighted in recording.

Within the conquered countries there was humour too, humour among the patriots—a grim and terrible kind that went by the name of "gallows humour."

Anecdotes and political jokes were whispered from mouth to ear. One such in Yugoslavia was, "Go ahead and sow," scoffed a German. "We'll do the reaping."

"I hope so," replied the farmer. "I'm sowing hemp."

Stephen, the Czech, drew a cartoon, surreptitiously circulated, of an insignificant little Hitler carrying a large brief case marked "Invasion Plans." He looks up at an imposing statue of Moses and remarks, "Though being racially prejudiced, I would like to know how you crossed the Red sea."

Under their breaths, the Czechs told how, after an intense search, the gestapo found one Czech who claimed to have benefitted by the German occupation. When asked what he did, he replied, "Your Excellency, I am a grave-digger."

In the village of Teplitz Schoenau, a hanged hen was found at dawn with the inscription, "I'd rather be dead than lay eggs for Hitler."

In France they circulated the story of the little boy who in the year 2044 asks his father, "Who was Hitler?" and receives the answer, "He was one of the old boys in ancient history books."

"What did he do?" persists the boy.

"I'm not a teacher," replies the father. "Look him up in the encyclopaedia."

A few minutes later the boy announces, "It says 'Hitler, a robber baron in the time of Stalin."

Pablo Picasso, caught in Paris, was brought to the Kommandant. The latter pointed to a copy of "Guernica" hanging on the wall—a painting showing the havoc wrought by nazi bombers during the Spanish Civil War.

"Did you do this?" shouted the nazi.

"No, sir. You did," Picasso replied.

A butcher shop in Lyons hung the photographs of Henri Pétain and Pièrre Laval at the window and placed beneath them a sign: *Vendu*—Sold Out.

These acts took courage. They bolstered the resistance of the victims and brought anger and fear to the nazis.

Gallows humour, while it could cause death to its adherents, gave hope and strength to the oppressed throughout Europe and helped to speed the collapse of the nazis. (See also Cartoons; Comic Strips.) (J. Ll.)

Hungarian Literature

See CENTRAL EUROPEAN AND BALKAN LITERATURE.

Hungary

As the result of territorial expansion from 1938 to 1941, the area of Hungary in 1942 was 66,409 sq.mi. with an estimated population of 14,733,000. After the axis defeat in World War II Hungary found itself reduced in 1945 to its size of 1938—an area of 35,911 sq.mi. Its population (Dec. 1936) was 8,989,000. The majority of the population was Roman Catholic, but there was a large Protestant and, formerly, a considerable Jewish, minority. Capital: Budapest. Chief cities (pop. 1939 census): Budapest (1,115,877); Szeged (141,254); Debrecen (128,442) and Kecskemét (83,837).

Hungary remained officially a kingdom until Feb. 1, 1946, though the throne had been vacant from 1918. From 1920 to 1945 the royal functions were exercised by a regent, Nicholas Horthy de Nagybánya. On Feb. 1, 1946, the republic was proclaimed. President (for a four-year term): Zoltan Tildy, Prime minister (1946): Ferenc Nagy. (X.)

Herald of Fascism.—Already at the beginning of 1937 the fate of Hungary was sealed. In the European constellation of that time its place, from the very first, was assigned beside that of fascist Italy and nazi Germany. Nicholas Kállay, then premier, spoke the truth when, in a speech made on Oct. 20, 1942, he boasted that neither Italian fascism nor German national socialism had introduced any novel idea; all that Benito Mussolini and Adolf Hitler had introduced were in the essence of the Szeged idea. Horthy's counterrevolution of 1919 was the herald of fascism in Europe. The only thing he failed to do was to elaborate in detail the organized construction of fascist ideology. The social demagogy of fascism and naziism was also lacking in him, all the more so because Horthy, after overthrowing the revolutions of 1918-19, re-established the semifeudalistic Hungarian large estate system, with the only difference that, from that time on, it was not so much the aristocrats who defended the privileges of the large estate owners, but the praetorian guards formed from the impoverished gentry, the chauvinistic upper middle class who, for their counterrevolutionary services, gained important positions in state politics.

All that characterized fascist foreign policy could be found in the Szeged idea: chauvinism, militarism; the mass organization idea so characteristic of fascism was, however, lacking in the internal policy in spite of its antiprogressive, antiliberal and anti-Semitic character. Horthy and his satellites were satisfied with inaugurating the middle classes into various race protective and chauvinistic social unions, but they kept their hands off the peasantry and working classes, because they wanted to keep these masses away from politics at any price, and took great care to safeguard the Hungarian gentility. The gradual militarization and

organization of the masses began only in 1932, during the premiership of Julius Gömbös.

The defense of this semifeudalistic order, the maintenance of this burdensome anachronistic and contradictory system was only possible, as at the time of the Austro-Hungarian monarchy, by dependence on such reactionary foreign powers who supported aggressive foreign political endeavours that served to conceal internal difficulties. The aggressive revisionary policy of the Horthy system, which proved a Fata Morgana to the country in consequence of the peace treaty of Trianon, from the very first rendered reconciliation with the neighbouring states impossible, as it reclaimed the thousand-year-old frontiers, which in reality meant the liquidation of the successor states, Czechoslovakia, Yugoslavia and Rumania, and the oppression of the Czech, Yugoslav and Rumanian nationalities.

It was for this reason that Count Stephen Bethlen, the so-called consolidating premier of the Horthy system (1922-31), rejected the proposition of Thomas Masaryk, president of the Czechoslovakian republic, for the restoration of the frontier territories peopled by Hungarians. He could not renounce the advantages which the revisionist policy afforded him in internal and foreign politics. From the very first the revisionist propaganda at home and abroad was carried on with indefatigable force. Bethlen, of course, first found an ally for his policy in Mussolini's Italy, but at the same time endeavoured to exploit the differences arising on the continent between France and England; as France supported the Little Entente, Bethlen endeavoured to gain the support of England. Lord Rothermere, an English publisher, became the greatest exponent of Hungarian revisionism, which later was so absurdly exaggerated that many Hungarians wished to make Rothermere their king.

Then, with the extension of fascism and naziism, the praetorian group came to the fore in Hungary, too, from among the ranks of army officers, civil servants and the middle classes in general, who awaited realization of the revisionary endeavours from the accomplishment of similar German and Italian aims. The most noted executor of these endeavours was an officer of Horthy's and Bethlen's making, Julius Gömbös. Gömbös became premier on Oct. 1, 1932, one month before the memorable German elections in which the National Socialists consolidated their position as the strongest party in Germany. On Jan. 10, 1933, just before Hitler's rise to power, Gömbös took over the additional office of foreign minister. From that time on, the connections between the two countries became ever closer, and when Mussolini still resisted Hitler because of Austria, it was Gömbös who first brought up the idea of a Berlin-Rome axis; moreover, it was he who coined the word "axis."

Double-Sided Policy.—Legalization of the quasi-parliament, the Social Democratic party, the trade unions and other similar democratic concessions saved Hungary from being booked by the west as a fascist and totalitarian state. On the other hand, this enabled the Horthy system, right up to the end of World War II, to carry out the "two irons in the fire" tactics with, however, certain divergencies, and at the same time an ostentatious pose of independence in foreign policy too. This is how, with constant changes, the definitely pro-German, the vacillating pro-German and, in a lesser degree, the anti-German elements could exist within the system.

For the sake of agricultural export to Germany the greater part of the large estate owners took no notice what-

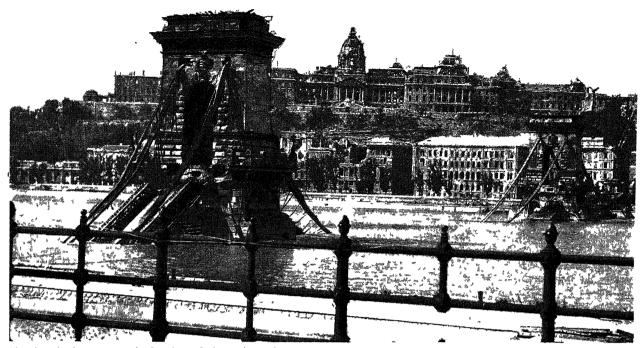
ever of the social agitation of the openly pronazi Hungarian quislings. A smaller part, together with the clerical majority, were legitimists and Habsburgers, for they saw the security of their future only in the mask of policy. Of the army 90% sympathized with Hitler. The trade concerns and banks, the civil servants and representatives of the government (80% of the parliament) were divided in their opinions, but later, with Hitler's advance, allowed themselves to be guided by the one governing idea.

Julius Gömbös died on Oct. 6, 1936, at the beginning of the last historical phase prior to World War II. During his premiership, the League of Nations discussed the complaint brought forward against Hungary by Yugoslavia, according to which the Croatian Ustashi were trained in Hungary at Jankapuszta. Gombos' League of Nations representative, Tiberius Eckhardt, was a member of the opposition who, at the beginning of the counterrevolutionary era, belonged to Gombos' extremist circle but later joined the anglophile group of the system. He played the part of the second "iron" which was constantly held in readiness, a part which, for a long time, seemed to be an ungrateful one, but which fact did not keep him from standing by Gömbös in the Jankapuszta affair.

Horthy, the Hungarian Pétain.-From 1937, after the death of Gombos, Hungarian foreign and internal policy was governed by external events insofar as the internal situation permitted. The path led straight to destruction. What happened between 1919 and 1937 had sealed the fate of Hungary. Already at that time the Hungarian system dangerously resembled the picture which later Vichy France portrayed in its connection with Germany. Horthy always considered the internal enemy greater than the external, and, for the preservation of the system and the Hungarian large estates, cast aside all patriotism. But at the same time he was afraid of the Doriots and Déats, because they followed too strong a social demagogy. There were the Hungarian go-between Lavals, who at the time of the German political and military victories were placed in the foreground as absolute pro-Germans, but who, in internal politics, were after all not nazis and were exchanged after German political or military defeats for the Flandins, Darlans and pro-Anglo-Saxon politicians. Horthy did not take definite steps against Maj. Francis Szálasi and his followers because, to a certain extent, they were not only Hitler's reserves, but his too. Hitler followed the same tactics toward Horthy as toward Marshal Pétain and other satellites. From the point of view of the maintenance of law and order, Horthy was preferable to Szálasi and the nazis, because through him he could utilize Hungary as a larder. To the Hungarian feudalists, as in France and elsewhere, he appeared as the defender of order and property. To the Hungarian farm labourers and workers he stood forth as the apostle of the new social order. Thus, he kept both classes in check. This situation prevailed, with smaller or greater variations, during 1937-45 and placed extraordinary tasks on the shoulders of those Hungarians who in a brave and unrelenting struggle strove to attain the impossible, to persuade into opposition the masses who for two decades had been living under suppression and were infected by revisionist, antiliberal, anti-Semitic and antisocialist propaganda.

But the mental and working elite could not prevent the catastrophe because they could not successfully counterbalance the backwardness of the Hungarian social order and the stupor of the masses.

Italian-Hungarian-Austrian Alliance.—After the death of Julius Gömbös, Koloman Darányi, a member of the large estate class, became premier. Darányi led a firmer policy



The chain bridge spanning the Danube at Budapest lay under water after the violent siege of Hungary's capital in 1945. Across the river, the royal palace and the buildings lining the shore below stood in virtual shambles

against the open fascists and Nyılases, the so-called Arrow-Cross party. Primarily, this was for a foreign political reason: Mussolini's temporary resistance to Hitler's anschluss endeavours. After Horthy's visit to Rome in Nov. 1936, the Hungarian ruling clique played with the thought that an Italian-English-French agreement might come to pass, and so to a certain extent it would have to modify its revisionist policy.

During 1937, considerable thought was given to an Italian-Austrian-Hungarian treaty. Darányi and Koloman Kánya, minister of foreign affairs, tried to advance their revisionist aims with a new power-seeking assemblage, in place of the Gombös axis' "rearguard." They tried to break up the Little Entente and, instead of emphasizing their friendship toward Germany, turned toward Italian fascism. From an internal political standpoint it was more agreeable for them to hold with Italian fascism, which had worn off its aging and social demagogy, all the more so since they could thus better get the west to accept their semifascistic system and so secure this system in any event. It was for this reason that they maintained, throughout the fatal period, their quasi-parliament chosen by open elections everywhere except in the cities.

Nothing characterized the semifeudalistic and semifascist system better than the fact that the peasantry was forbidden by law to form trade unions and the Social Democratic party was forbidden to undertake any kind of political activity in the villages—and this in a country where more than 55% of the population comprised peasants and farm workers. The agricultural population was excluded from all health insurance, and no worker, industrial or agricultural, was entitled to unemployment benefits. At the bottom of Hungary's social and political reaction lay the distribution of the land. The census of 1930 showed that out of a population of 8,500,000, 1,000,000 rural workers had no land of their own; in addition to these there were 600,000 domestic labourers on the large estates and 300,000

owning less than 1 ac. After the so-called land reform in 1920, 36 large landowners still owned the same acreage as 1,184,783 peasants who had less than 5 ac. each.

In 1937, Hungarian statesmen visited Rome and Vienna, while Italian and Austrian leaders went to Budapest. On May 19, the king and queen of Italy visited Budapest. During a toast at the reception, Horthy referred to the Triple alliance as the firm column of peace. On May 26, Koloman Kánya, minister of foreign affairs, announced that the autarchy of the Little Entente had proved a failure in the Danube basin.

The foreign political tactics of Kánya at that time consisted of a struggle for the equal rights of Hungary and the ever increasing defense of the Hungarian minorities, instead of emphasizing the sincere revisionary aims and, with the help of Italy, the endeavour to tear Yugoslavia from the Little Entente.

At the same time, Horthy's power in internal policy was strengthened. On June 25, 1937, the government introduced a bill in connection with the extension of the regent's jurisdiction. Horthy, who had already held the right to prorogue or dissolve parliament, thereafter held no responsibility toward the parliament whatever.

Anschluss and its Consequences to Hungary.—It was evident that the policy of Darányi and Kánya was built upon illusions. Neither Italy nor the Italian-Hungarian-Austrian alliance had an appropriate economic basis for the continuance of a long-lasting independent policy. In The Bloodless Invasion (London, 1940) Paul Einzig described how the nazis conquered the Danubian countries. Hungary was one of their complete victims. Already in 1937, 50% of the Danubian countries were in their hands. Germany deliberately contracted large debts. From 1933 on, the nazis adopted a policy of buying the largest possible quantity of goods from the small eastern European countries. In this way they were bound through their claims to Germany. In addition, Germany absorbed the market of the small countries, reselling abroad at a very low price for cash the commodities which it had acquired from them and for which it had not paid. In this way Germany ruined the markets

for Danubian and Balkan exports. In exchange for commodities, Germany, in several cases, supplied the small nations with arms. Even though the material was secondhand it was better than nothing; with German arms deliveries the influence of the small countries naturally grew stronger. Hungary became completely dependent on Germany economically. For any possible advantage it could gain out of the transaction Hungary had to give political concessions such as more independence for the German minorities and pro-German orientation; in short, the strengthening of the position of the Hungarian quislings. As economic advantages were linked closely to the German policy, many were tempted to follow it. Although the successive governments were on the whole pro-German, there was an additional need for an organized German volkstum, controlled by demagogic quislings.

The meeting of Hitler and Mussolini at Munich in Sept. 1937 brought about a change in Hungarian politics. Hungary again followed the path Gömbös had prepared, though not unanimously. Two months later Darányi and Kánya travelled to Berlin. It then became evident that Hungary, with Mussolini, would drop Austria. The great Austro-Hungarian friendship, in which the collaboration of the Heimwehr fascist ideology and Horthy's ideology played a great part, fell to pieces since it no longer suited the requirements.

On Jan. 9, 1938, the Austrian, Hungarian and Italian ministers of foreign affairs again met in Budapest for negotiations. The published communiqué clearly showed that Austria was lost. The first paragraph of the communiqué emphasized the closest collaboration with Germany, the second paragraph the struggle against Bolshevism. As a result of these negotiations Hungary recognized Francisco Franco, but received a guarantee that it could declare its equal rights to rearm. At the same time, Hungary was directed to seek reconciliation with the Rumanian Goga government of the extreme right, which had meanwhile been formed. They endeavoured to make the encirclement of Czechoslovakia complete.

On Feb. 3 the extremist powers obtained the upper hand within the Hungarian government party. The pro-German, Andreas Tasnádi Nagy, was nominated president of the party and the government was changed. Adalbert (Béla) Imrédy became minister of economy and Louis Remenyi Schneller minister of finance. Meanwhile the fascist bloc was doomed to an unforeseen disappointment. Goga's government in Rumania failed, but Hitler, at that time, had other things in hand; he arranged a concentrated attack against Austria. The fate of Austria was sealed on March 11, and Germany became Hungary's neighbour. On March 16, Mussolini, the one-time protector of Austrian independence, swore to German-Italian friendship, and Horthy naturally fell into line. On April 8 the first anti-Semitic bill which thoroughly curtailed the rights of the Jews was introduced in parliament. This new anti-Jewish law was really the second in the history of the Horthy system; Horthy had introduced the first in 1920, a numerus clausus at the universities directed against the Jews.

Appeasement.—The policy of appeasement hastened Hungary's alignment with Hitler's policy, and the most pro-German politicians came to the front. When, on April 22, Neville Chamberlain announced that he wished to reorganize the League of Nations on the basis of a great power pact, Hungary made preparations for a sterner revisionist and antibolshevistic foreign policy. On May

13, 1938, Darányi resigned and Imrédy, who had won the confidence of British circles, was made premier as the double-dealing Hungarian politicians took great care to remain at least acceptable to the west too. It was then that the foreign political offensive aimed at blockading Czechoslovakia began. On July 17, Imrédy and Kánya visited Rome.

When Konrad Henlein began his activities in the Sudetenland, the Hungarian minority also went into action. On Aug. 3 the Czechoslovak-Hungarian party, which did not succeed in winning over the whole Hungarian people, claimed entire equality and self-government.

On Aug. 21, on Hitler's invitation, Horthy and his wife took part in a festival of the fleet and the regent launched the "Prinz Eugen." Events followed in quick succession. The German-Czechoslovak conflict found the Hungarian government quite prepared; in internal policy too, naziism and fascism had gained ground. Corporation chambers were established. At the time of the Munich agreement Hungary aided in hastening the fall of Czechoslovakia. Mussolini, now within the axis, again stepped forth in the interest of Hungary, this time more energetically and, on Oct. 3, claimed the whole of Slovakia on its behalf. But Hitler supported an independent Slovakia, which, on the one hand, meant a greater help to him in the suppression of Czechoslovakia, and, on the other hand, a suitable rear guard against the Hungarian policy.

As a result, there was much delay in the fulfilment of Hungary's claims. Slovakia, with Hitler behind it, resisted all claims, and on Oct. 13, Hungarian-Slovak negotiations were interrupted. Finally, on Nov. 3, the Italian-German court of arbitration convened in Vienna, in consequence of which Hungary recovered a part of the Felvidék. Hungarian revisionists celebrated the event. Horthy was nominated augmenter of the country. Premier Imrédy, Minister of Foreign Affairs Kánya and Paul Teleki, minister of culture, leaders in the negotiations, received the great cross of the Hungarian Order of Merit. On Nov. 9, Lord Rothermere, the apostle of Hungarian revisionism, was welcomed to Budapest so that "English friendship" should not be left out of the game.

With the first "gifts" from Hitler and Mussolini, the aims of territorial expansion were partially realized, and thus there was no stopping the leaders of the movement.

After 18 years of revisionist policy they had led the country straight to its doom. For the masses the opium dreams became reality. In this question there were no differences of opinion between the politicians and the economic leaders. Even at that time, like a grim eminence, Stephen Bethlen stood at the back of Horthy. In spite of his reserved bearing he was in accord with Horthy and his official government with regard to general foreign policy. He wished only for a sterner policy against increasing agitation of the extremist Nyilas party, and so, behind the scenes, he agitated against Imrédy, who in the meantime had veered toward the right. With the help of the small group of legitimate large land proprietors and capitalists, who were afraid of social demagogy, Bethlen succeeded in ousting Imrédy, by ascertaining that anti-Semitic Imrédy had Jews among his ancestors. When Horthy informed him of this, Imrédy collapsed, and on Feb. 15, 1939, he resigned. His successor was Count Paul Teleki, who stood close to Bethlen and who imagined that with the realization of expansionist aims and the consolidation of the semifeudalistic and semifascistic system, Hungary could maintain its national independence and take no part in the forthcoming war. Teleki knew that entering the war would mean the end of the system if

Germany were defeated, while if Germany was victorious, it would mean the end of independence. Of course, Germany, realizing this policy, strengthened its reserves, the Nyilas party, but Teleki counterbalanced this move by trying to take the wind out of Nyilas sails. He quickly brought into force a more stringent anti-Jewish law. The open nazis, knowing their strength, successfully clamoured for the introduction of a new election law which commanded secrecy, but at the same time, with various restrictions, excluded the greater part of the workers and peasantry from the ranks of the voters.

On Feb. 22, 1939, Teleki delivered a significant speech in which he declared "We wish the thousand year old Hungarian idea to be respected." He went even further. On Feb. 24, he banned the right-wing Hungarista party. In foreign politics, however, he was prisoner of his own program and the whole of Horthy's political system of two decades. Also on Feb. 24 Hungary joined the anti-Comintern pact.

On March 15, 1939, at the same time as Hitler's march on Prague, Horthy's soldiers marched into Ruthenia, in the eastern part of Czechoslovakia, where a great part of the population was Ruthenian. With this step Hungary bound its fate more closely to that of Hitler's. That there was hardly any difference between Bethlen's foreign policy, and that of the Nyilaskereszt party, needed no better proof than Bethlen's article of April 11, 1939, in the moderately conservative Pesti Hirlap which stated that: "It is far better for the small States to ensure their independence through close friendship with Germany if necessary, even at the price of certain concessions."

In the Drift of War.—In the national assembly elections of May 30, 1939, the government party won by a great majority, although a part of the middle classes was already on the side of the open nazis. Under the leadership of the accused Imrédy, who had become a staunch supporter of naziism, 61 right-wing extremists and Nyilas members obtained seats in parliament. This fact and the growth of Germany's economic influence rendered the successful continuance of the swinging policy of Teleki and his satellites quite illusory.

For a time the German-Russian pact signed in Aug. 1939 checked the favourite antibolshevistic policy and made manoeuvring more difficult, for side by side with the anti-Semitic slogans the bolshevistic bogey was the bone of contention thrown to the dissatisfied masses. Thus, Horthy's revisionist claims had to be more strongly emphasized, which incidentally drove the country more closely into the arms of Germany. After the outbreak of World War II in Sept. 1939, Teleki and his followers, with the aid of social-political "drops of oil" and chiefly on account of the prosperity derived from the German military orders, were able to counterbalance the demagogy of the Nyilas party, the only tendency of which was to compel the reigning clique to back Hitler unconditionally. Hitler by no means wanted to create a disturbance in his "larder" because he was in great need of Hungarian wheat, bauxite and other commodities.

Thereafter, the revisionism of Hungarian foreign policy continued apace with the success of German arms. At the time of the "phony war," Hungary cast an eye toward the west too, in the hope that the Chamberlain government would make peace with Hitler, a peace which would have strengthened the Hungarian system.

Hitler's victory over France in 1940 also blinded Teleki, and again the expansionist idea proved stronger than tactical tendency. After the German occupation of Paris, Teleki lost no time in wiring Hitler and declaring that Dismemberment of the still-resistant Rumania in 1940 afforded another opportunity to strengthen the chauvinistic endeavours. On July 9, 1940, Teleki and Minister of Foreign Affairs Csáky travelled to Berlin. Their visit brought about the second Viennese decision (Aug. 30, 1940) in which Joachim von Ribbentrop and Count Galeazzo Ciano awarded Hungary the northern part of Transylvania. As in the first Viennese decision, Mussolini supported Hungary, but Von Ribbentrop did not fail

the Europe of Trianon no longer existed.

to make Transylvania an instrument of blackmail. During the continuation of the war the Germans alternatively threatened Hungary with the granting of Rumanian requests, and Rumania with the statement that it would be deprived of the southern part of Transylvania.

In Hungarian internal policy, meanwhile, the changing of the guard was continued. The third anti-Jewish bill was passed with increased enforcement but still not with the severity of the laws of Nuernberg. The Jewish question was a good card to play in the maintenance of Hungarian policy toward England, which as yet had not become estranged. Most of the Jews were thrown into labour camps, where they were badly treated but, as yet, not annihilated.

Horthy and his followers were alarmed at the consequences of their policy, and after the first English victories in Africa in the autumn of 1940, they again swung the pendulum. On Nov. 20, 1940, after having hastily joined the German-Italian-Japanese Tripartite pact, Hungary sought a treaty of friendship with Yugoslavia. On Dec. 15, in their joy at the re-annexation of Transylvania, Hungarians swore allegiance to the Szeged idea, i.e., the large estate system and revisionism with the cry: "From Szeged to Zágon."

On Jan. 21, 1941, Csáky suddenly died under suspicious circumstances, and the pro-German Ladislas Bárdossy took his place; yet Teleki on Feb. 21 succeeded in bringing about the signing of the contract of "eternal friendship" between Hungary and Yugoslavia.

On March 8, in a move to ensure himself against the possibility of an Anglo-Saxon victory, Horthy sent Tiberius Eckhardt to the United States. On March 27, the Yugoslav coup d'état also brought about a crisis in Hungary and placed Teleki in a critical situation. He had to break the contract of friendship signed only a few weeks before. There was no escape from Germany's embracing arms. On April 3, Teleki committed suicide, the victim of his own policy. The details of his death were not cleared up.

Ladislas Bárdossy became premier, and on April 10 Horthy gave the order for Hungarian troops to march into Yugoslavia. In consequence, England broke off diplomatic relations with Hungary.

After the new German victories in the Balkans, Hungary for a time gave up its swinging policy and carried out all that Germany demanded of it. Horthy then served Hitler without any direct interest. On June 29, 1941, Horthy and Bárdossy led the country into the war against Russia.

When in 1946 the Hungarian Democrats put Bárdossy on trial on a charge of war guilt, it came to light that Horthy and Bárdossy had had the town of Kassa bombed to serve as a pretext for the declaration of war.

Bárdossy consoled the Hungarians by telling them that the new Europe claimed only economic sacrifices from Hungary, for they were terrified by the war. The ranks of the opposition swelled, mostly from among the labourers and intellectuals. Bárdossy and his followers invented the

slogan, "much bread and little blood," with which they deluded themselves for a number of months.

Hitler, in the hope of a speedy victory, at first demanded only one mechanized army corps from Horthy. This Hungary granted him and thought that all was settled. The anti-bolshevistic agitation surpassed all expectations, and the war seemed only ideological. On March 8, 1942, Nicholas Kállay took Bárdossy's place as premier. Bárdossy had been too openly a nazi agent, and the increasing sacrifices of World War II could be thrust upon the people only by a more acceptable politician from the Teleki-Bethlen group. Hungary was also counting on the possibility of a change in the fortunes of war and had to make preparations accordingly. But for the time being there was no question of such a change, because the summer of 1942 was again favourable for the Germans. Nevertheless, Hitler demanded more and more "blood" from Hungary. Except for a few brave organizers, there was no serious resistance. The still-tolerated trade unions, together with the Social Democratic party, endeavoured to stir up resistance, but with little success. The antipathy of the Hungarian educated classes was marked.

Kállay, in a speech at a meeting of the grand council of the government party on April 20, 1942, said: "We go to war voluntarily, not driven into it, not coerced by anyone. . . . For this war I take the whole responsibility upon myself. . . . I take the responsibility because I know why we have to fight." After his visit to Hitler at his head-quarters on July 1, 1942, Kállay declared: "I am convinced that, after victorious battles, this summer will clear up the European situation and already in this year the reformation of the New Europe can begin."

In the autumn of 1942, after Stalingrad and the Allied landing in Africa, a great change came into Hungarian politics. Kállay resorted again to his swinging policy and afforded great scope to the legal opposition, the Social Democrats and smallholders, in order to prove to the west that Hungary was "democratic."

The persecution of the Jews also abated after the summer and autumn of 1942, but thousands of Jews had already died in the labour camps and on the Russian front. Then came the catastrophe of Voronezh. On January 25, 1943, almost the whole of the 2nd Hungarian army was annihilated. Kállay and his satellites did not dare to reveal the truth, and dissatisfaction increased in the country. The legal opposition still was apathetic; instead of preparing for organized mass resistance, it was satisfied by fighting with words only. In the press of the opposition, a slightly anti-German tone was discerned; organization began in working class circles, but not a word about armed resistance was uttered. A few leaders, however, together with the London and Moscow emigrants, warned the Hungarian people that only open fighting on the side of the Allies could save them from a catastrophe. Meanwhile, Bethlen, by way of Stockholm and Ankara, offered his services to Adm. Jean Darlan but stipulated such conditions that the Allies rejected them entirely.

The columns of the government's semiofficial organ, Pester Lloyd dealt with proposals of rapprochement with the Allies as early as Jan. 1943, but the offer was energetically rejected by way of the British Broadcasting corporation.

Hitler, meanwhile, had had enough of this double-dealing policy, and the members of the Nyilas party increased their agitation. It became evident that the government

policy could not last. After Mussolini's fall the Kállay government became more and more desperate. The general tone was quite different from that heard in 1942; it was now not a question of an ideological but of a "compulsory" war.

On Jan. 1, 1944, former Premier Count Michael Károlyi addressed a message from London by wireless to the Hungarian people, warning them of the great danger and advising them to organize partisan fights and mass resistance. On March 19, 1944, Hitler marched into Hungary and Horthy gave himself up. Even then he preferred the Germans to resistance, for he was afraid that the latter would mean his end. Kállay fled to the Turkish embassy and Döme Sztojay, ambassador to Berlin, took over the leadership of the government. The Nuernberg laws were immediately brought into force, and in the summer of 1944 the deportation of the rural Jews to Auschwitz began. The united front of the national independence front was created with the participation of the Small Landowners, Social-Democrats and Communists. A part of the legal opposition was imprisoned or deported, the rest merely being declared illegal. Andrew Bajcsi Zsilinszky, leader of the anti-German Small Landowners, was captured, but not before firing at the members of the gestapo who arrested him; he too was wounded. Among the civilians, this shot was practically the only manifestation of resistance. So far there had been martyrs only from the ranks of the Communists.

Collapse and Liberation.-The continued series of German defeats in the summer of 1944 again resulted in a slackening of nazi pressure. Sztojay resigned and Horthy entrusted Col. Gen. Vitez Geza Lakatos with the reformation of the government. Rumania's unconditional surrender on Aug. 23, 1944, left Hungary the only remaining satellite of Hitler. As soon as the Russians crossed the frontier into Hungary, the Lakatos government began its armistice negotiations, but Horthy hesitated until the last minute and could neither bring himself to come to an agreement with Arpad Szakasits, leader of the illegal Social-Democratic party, and Ladislas Rajk, leader of the illegal Communist party, nor break away from the Germans. At last, after his son Nicholas had been abducted by the Germans on Oct. 15, Horthy announced by radio that he would break off relations with the Germans and called for an armistice, but in a few hours this unpremeditated change also ended in failure. Horthy became a prisoner of the Germans and not only withdrew his announcement but also handed over his power to Maj. Francis Szálasi, leader of the Nyilas party. Thereupon, the Nyilas reign of terror began; with its slaughter and deportation of tens of thousands and its unbridled terrorism, it exceeded by far the cruelties of the German nazis. The Nyilas regime in Hungary lasted from Oct. 15, 1944, until April 4, 1945, but always on a gradually decreasing scale; liberation of the eastern part of the country right up to the outskirts of Budapest had been effected by the red army as early as Nov. 1944. In December the northern part was also liberated and on Dec. 24, the siege of Budapest, which lasted 52 days, began. This event, because of the treachery of Horthy and the Hungarian Nyilas party, caused incredible suffering to the population. All the Danube bridges were destroyed by the Germans; the city, especially Buda on the right bank of the Danube, was reduced to ruins. Not only Budapest, but the whole country suffered the pangs of war. Few villages stood intact. In addition, the Nyilas party and the Germans carried away everything that could be moved; machines, agricultural implements, whole factory plants, hospital equipment, laboratories, raw materials, the gold of

the National bank, ships, engines, railway equipment and 70% of the livestock. As soon as the west of the country had also been liberated after strenuous fighting in February and March, Hungary was a picture of utter destruction. Only the great desire of the population to live helped the country through this period. The comparatively small group of resisters, who, from the very beginning of World War II rallied into the Hungarian national independent front, organized national committees everywhere and immediately began to build the country from its ruins.

In Szeged on Dec. 5, 1944, the Hungarian national inde-

pendent front, which then consisted of the Small Landowner, Social-Democratic, Communist, National Peasant and Civil Democratic parties, introduced a new democratic program and completely broke with the past. Between Dec. 5 and Dec. 13, 1944, a committee was formed from the delegates of the national independent front which organized the temporary national assembly. This committee called upon the freed towns and villages to choose their delegates. Elections were held between Dec. 13 and 20, in such a way that the organs of local public administration, the parties, trade unions, agricultural unions, industrial unions and other public organizations, chose their delegates for the national assembly.

The temporary national assembly convened at Debrecen in the Protestant college on Dec. 21, 1944. On Dec. 22, the temporary national assembly chose a political committee to pave the way for election of a temporary government. On Christmas eve, 1944, the temporary national assembly elected the temporary government. • Adalbart Nicholas Dálnoki, the commander-in-chief of the former first Hungarian army, who at the last moment went over to the Russians from the circle of the Hungarian general staff, became the premier of the temporary government, which consisted of representatives from the parties of the independent front.

The most important points of the program of the national assembly and government were the ensuing armistice with the Allies, the safeguarding of liberty and democratic rights, the taking over of the administration of the country and, above all, the extensive territorial reform and distribution that broke the backbone of the feudalistic class.

On Dec. 26, 1944, the temporary national assembly declared war on Germany. On Jan. 10, 1945, the Allied Powers and Hungary signed the armistice in Moscow.

Reconstruction.-The fact that the new democratic Hun-

		Hungary: Statistical Data 1938 1941 . 1945							
ltem	Value (000's omitted)	Amount or	Value (000's	Amount or	Value (000's	1945 Amount or			
Exchange rate	omitteaj	Number	omitted)	Number	omitted)	Number			
U.S		1 Pengö = 19.7 cents 23.5 to 24 Pengös =	£1 1	Pengö = 19.770 co 20.80 Pengös† =£	ents 30,0	000 Pengos =\$1.00*			
Government revenues	\$236,541		\$402,517		\$196‡				
Government expenditures	(£48,382) \$249,946		(£99,831) \$412,007		(£49) \$205‡				
Gold reserves	(£51,124) \$24,461		(£102,184 \$19,770	.)	(£51) \$3‡				
National debt	(£5,003) \$347,232 (£71,023)		(£4,903) \$497,216		(±1) \$217‡				
Transportation Railroads	(20/1,023)		(£123,317	}	(£54)				
Highways		5,381 mi. 17,299 mi.		8,420 mi. 25,636 mi.		4,848 mi.§			
Waterways		1,289 mi.		2,190 mi. 777 mi.		15,959 mī.§ 1,222 mi.§			
Communication Telephones		166,773		232,731		•••			
Telegraph lines Radio Sets		6,356 mi. 419,233		10,964 mi.		39,618§ _6,214 mi.§			
Minerals Lignite				731,356		178,319§			
Coal		9,155,704 tons 1,148,597 "				11,892,274 tons 1,513,017 tons			
Iron ore		595,573 " 328,044 "				1,099,544 tons 377,428 tons			
Turnips		3,881,156 tons							
Wheat		2,970,588 '' 2,934,367 ''				1,804,729 tons 725,095 "			
Potatoes		2,359,608 " 1,068,572 "	•			2,062,566 " 1,863,761 "			
Livestock Swine		3,110,060				195,642 "			
Cattle		1,874,689				1,1 <i>45,5</i> 04 1,008,700			
Horses	\$601,838	813,591				311,152 368,844			
E I	(£123.100)	•••	\$797,566† (£208,242)	• • • • • • • • • • • • • • • • • • • •	\$288∥ (£71)	•••			
	\$139,079 (£28,451)	•••	\$216,712† (£56,583)	•••	\$73 (£18)	•••			
Textile	\$92,043 (£18,827)	•••	\$119,903† (£31,306)	•••	\$41 (£10)	•••			
Metal	\$85,506 (£17,489)	•••	\$93,114† (£24,312)	•••	\$28 (£7)	•••			
Machinery	\$60,844 (£12,445)	• • •	\$138,008† (£36,033)	•••	\$57 (£14)	•••			
Exports—Total	\$103,050 (£21,078)	2,281,000 tons	•••	•••		• • •			
Wheat	\$13,474 (£2.754)	481,000 tons	\$7,400 (£1,835)	166,720 tons	‡ ¶	60,676 tons‡			
Livestock	\$12,679 (£2,593) \$5,215	319,000	\$20,253 (£5,023)	182,000	\$1‡	56,000‡			
Poultry	\$5,215 (£1,067)	252,000	\$9,098	164,000	(오) ‡ŏ	9,000‡			
Electrical machinery and apparatus	\$5,023	2.024.000.4	(£2,256)						
Imports—Total	(£).027)	2,026,000 tons	\$4,480 (£1,111)	•••	‡ª	•••			
	\$81,000 (£16,568)	3,291,000 tons	•••	•••	•••	•••			
Timber and wood	\$8,759 (£1,792)	34,214 tons	\$4,310 (£1,069)	257,008 tons	‡°	135,966 tons‡			
Raw metals	\$4,551 (£931)	37,404 tons	\$3,365 (£835)	21,110 tons	‡▲	10,207 tons‡			
Raw cotton	\$4,444 (£909)	29,435 tons	\$3,347 (£830)	10,549 tons	‡*	1,183 tons‡			
Paper and manufactures	\$4,188 (£857)	68,956 tons	\$9,705 (£2,407)	124,763 tons	\$2‡ (°)	97,696 tons‡			
Defense Standing army personnel.	•	50,000	(,,	200,000†	(-)				
Reserves		650,000		700,000†					
personnel	\$27,203	2,160	£02.007±	6,000†					
Education	(£5,564)		\$92,087† (£24,044)						
Elementary schools		6,899							
Students		963,087 5,740							
Students		299,321 5							
Students		9,746							
*All values in 1945 column con †1940.		45 value of pengö. 243.	* \$ 19	6 (£46).	444	74 / 00 / 01			
‡1 <i>944</i> .	¶\$6	886 (£170).	□\$40	4 (£100).		76 (£242). 00 (<i>£74</i>).			
§Preliminary figures. '	₽(£ :	288).		9 (£139).		516).			

Hungary: Statistical Data

gary was born during World War II and was based on the collaboration of all anti-German forces indispensably resulted in many former Horthyists joining the democratic camp. In spite of this, the execution of the land reform was immediately put into force. It was evident that the hasty distribution of land, from a national economic standpoint, could not be done without mistakes and inequities. By the immediate compensatory expropriation of every estate consisting of more than 1,000 ac., however, and by permitting only 100 ac. to be retained from among the 100 and 1,000 ac. estates, it was possible for 600,000 landless peasants (1,800,000 in all, together with their families), to sow and reap for the first time on their own parcels of land, averaging about 5 ac. each. As the country was .liberated piece by piece, the distribution of land was immediately put into action. The greater part of the proprietors, together with the Germans, had escaped toward the west, but the Germans took with them all the agricultural equipment. The hard work of the peasants, however, helped save the country from famine. The Hungarian workers, too, resumed their work immediately. In Budapest, after the final liberation on Feb. 13, 1945, and after the transference to the capital of the temporary government, electric and gas utilities were re-established in less than three months.

The terms of the armistice were severe, but after the loss of the war it was somewhat of a miracle that the country's independent existence was permitted at all. The nation had to withdraw to its frontiers of 1938, and an allied control committee was established in Budapest to see that the government respected the Armistice agreements.

During 1945-46, Hungarian democracy passed judgment on many war criminals. The chief war criminals: Ladislas Bárdossy, Adalbert (Béla) Imrédy, former premier, Francis Szálasi, the Nyilas leader, and many others were executed. Horthy, who was taken into custody by the Germans on Oct. 15, 1944, and was later captured in Germany by the Americans, was not claimed as a war criminal. The more advanced elements were in no doubt of his guilt for the highest power had always been in his hands, but this was expressed only by democratic re-educational propaganda.

The great lack of commodities and the critical material losses of the country resulted in the greatest inflation in history, which aggravated the suffering of the population of the country. In spite of this, reconstruction was carried on. To a certain extent inflation raised the money for the expenses of reconstruction.

After liberation two new bridges were built across the Danube in Budapest and the traffic system was also restored. The factories re-attained 60% of their prewar production.

Reparations (\$300,000,000) and the troops of occupation were great burdens on the country, and the help received from the United Nations Relief and Rehabilitation administration and other foreign relief sources was far less than that rendered to the victorious countries or even to Austria. Yet stabilization of the currency was the greatest achievement of the country in the early postwar period.

In Nov. 1945 Hungary, for the first time in history, held a general secret-ballot democratic election, in which the nonsocialist, democratic party of the coalition, the Small Landowners, won 58% of the votes, the Labour party 34% against 8% won by the National Peasant party. On the basis of this election the new national assembly was formed, then later, the new coalition government, pre-

sided over by Zoltán Tildy, leader of the Small Landowners. In Feb. 1946 the grotesque kingless kingdom of 25 years' standing, was abolished and the national assembly voted the new republic a constitution. Zoltán Tildy was nominated president of the republic, while Ferenc Nagy, new leader-of the Small Landowners became premier. Mathias Rákasi, leader of the Communists, and Árpád Szakasits, leader of the Social-Democrats, were nominated deputy premiers in the government.

Within the coalition there was a constant conflict between the Social-Democrat, Communist and National Peasant parties representing the workers and the poor peasantry on the one part, and the Small Landowners representing the more well-to-do peasants and the citizens on the other. The recurring crises were, for a time, eased by compromises, but a final settlement was constantly postponed. The greater part of the former followers of the Horthy system joined the party of Small Landowners. (See also Rumania; World War II.) (M. Ki.)

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Hunting

See WILDLIFE CONSERVATION.

Hurdling

See TRACK AND FIELD SPORTS.

Hurley, Patrick Jay

Hurley (1883-), U.S. lawyer, diplomat and army officer, was born Jan. 8, 1883, in the Choctaw nation, Indian territory (later the state of Oklahoma). He took his law degree from the National University law school in Washington in 1908 and began practice in that year at Tulsa, Okla. From 1912 to 1917 he was national attorney for the Choctaws, settling their claims with the U.S. government. After serving in World War I and reaching the grade of lieutenant colonel, he returned to the practice of law. He was influential in having Herbert Hoover nominated for president in 1928, and served as secretary of war during Hoover's term of office. A month after the Pearl Harbor attack, he was promoted to brigadier general and was assigned to the far eastern theatre of operations, where he was put in charge of running supplies through the Japanese blockade to the defenders of Bataan. He was President Roosevelt's special representative to the soviet union in Nov.-Dec. 1942, and in March 1943 was named special representative to the near and middle east. Promoted to the rank of major general in Dec. 1943, Hurley was appointed ambassador to China in Dec. 1944. He sided with the Chungking government in its factional struggle with the Chinese Communists. When he announced his resignation on Nov. 27, 1945, he charged that career diplomats of the state department were sabotaging U.S. foreign policy in China by siding with the Communists and by excluding the United States economically.

Hurricanes

See Disasters; Seismology.

Husseini, Haj Amin el

Husseini (1900?—), Arab religious leader, politician and grand mufti of Jerusalem, was educated at the

El Azhar university in Cairo, where he was profoundly influenced by the teachings of the rector, Sheik Mustapha el Maraghi, celebrated Arab scholar and archpriest of Arab nationalism. During World War I, he served with Feisal at Damascus and saw action in Palestine. After the Balfour declaration, the mufti joined Arab nationalists in protest against establishment of the Jewish national homeland. He participated in the anti-Jewish disturbances at Jerusalem in 1920 and then fled to Trans-Jordan to avoid serving a prison sentence. Returning under amnesty, he was appointed by the British in 1921 as grand mufti. The following year, he was elected to the Supreme Moslem council.

The grand mufti participated in and encouraged the Arab attacks on Jews in 1937. The police took him into custody in July but the mufti "escaped" and later fled to the Lebanese republic, where he was given asylum. When the French were about to arrest him, he slipped through police cordons and fled to Iraq after the outbreak of World War II in 1939. In Iraq, he played a prominent role in engineering the pro-axis revolt of 1941. After the collapse of this rebellion, Husseini fled to Rome and Berlin.

Arriving in the reich in 1941, the mufti met Hitler and Ribbentrop. He was authorized to broadcast over axis radio channels anti-British and anti-Jewish propaganda to the middle east and helped recruit Moslem units for the German S.S. (Elite Guard) troops.

He also was charged with having urged axis leaders to send their Jewish citizens, not to Palestine, but to Poland for extermination.

He fled to Switzerland after the German collapse in May 1945, but in compliance with the Allied directives against harbouring war criminals, the Swiss deported the mufti to France, where he was placed under house arrest in a villa outside Paris. French officials declared on May 8, 1946, that they would see that he did not leave for the middle east. On June 10, however, the French disclosed that the mufti had "escaped" from their custody; ten days later it was disclosed that he had arrived in Egypt, where he was given sanctuary by King Farouk. Both the British and French governments were accused of complicity in the mufti's escape, although official spokesmen of these countries denied the charges.

Shortly after his arrival in Egypt, Husseini was made spiritual head of a newly-formed Palestine committee created by the Arab league. Jerusalem dispatches dated Sept. 30, 1946, said the mufti had been made head of a secret "shadow government" for Palestine.

Hutchins, Robert Maynard

), U.S. educator, was born Jan. Hutchins (1899-17, 1899, in Brooklyn, N.Y. His father, William James Hutchins, minister and theologian, was subsequently president of Berea college, Berea, Ky. Hutchins left Oberlin college, Oberlin, O., in 1917 to enlist in the U.S. ambulance corps, winning the Croce di Guerra in action with the Italian army. Entering Yale in 1919, he received his A.B. in 1921 and his LL. B. (magna cum laude) in 1925, subsequently receiving honorary degrees from many colleges and universities. In 1923 he was appointed secretary of Yale university and in 1927 dean of its law school. In 1929, at the age of 30, he became the fifth president of the University of Chicago, where his reforms, and proposals for reform, made him one of the best-known and most controversial figures in the history of American education.

From 1937 to 1946 he emerged as a leading figure in the prewar and postwar debate over the role of the United

States in world affairs. Opposing the "steps short of war" policy prior to Pearl Harbor, he argued, in speeches and articles, that the U.S. was "morally unprepared" and that its participation in the war, even if it ended in victory, would diminish rather than increase the strength of democracy both at home and abroad. Calling for the extension of liberal domestic reforms to provide "light and leading to a suffering world," Hutchins never allied himself with any political or extra-political group, asserting, in one of his 1941 speeches, "I am not a member of the America First Committee. I should like to join a committee for Humanity First."

Throughout World War II the University of Chicago was a major centre of military training and governmentsponsored research. When, with the defeat of Japan, it was revealed that the university, under Hutchins' administration, had played a central role in the development of the atomic bomb, Hutchins declared in a radio broadcast that "with the dropping of the bomb, the United States lost its moral prestige." He then began a campaign, in speeches and writings, for international civilian control of atomic energy and against peacetime military conscription. Calling for immediate world organization and the abandonment of national sovereignty as the only hope of saving civilization from atomic destruction, he accepted the chairmanship of the Committee to Frame a World Constitution. In order to devote more time to writing and speaking, he resigned as president of the university and assumed the post of chancellor.

In 1946 he took a year's leave of absence from the university to be chairman of the board of editors of Encyclopædia Britannica, Inc. Announcing his intention to devote himself to the spread of adult education through the reading and discussion of the "great books," Hutchins declared: "If there is a choice to be made between youth and adult education, then the urgency of our time gives priority to the adult."

Besides editing a set of the "great books" to be published by Encyclopædia Britannica in 1948, Hutchins, during the decade beginning in 1937, extended and consolidated his educational reforms at Chicago. In 1937, the law school was reorganized in the direction of a fundamental, rather than a vocational, curriculum. In the same year, Chicago's college plan went into effect, offering a four-year liberal arts program beginning with the usual junior year of high school, and in 1942 the university decided to award the bachelor's degree for this program and to substitute a battery of placement tests for the high school credit system as the basis of admission to the college. Chicago's withdrawal from intercollegiate football preceded by several years the general wartime deflation of college athletics.

In addition to papers in learned journals, articles in popular magazines, and platform and radio addresses, Hutchins continued to teach an undergraduate "great books" course during the decade and wrote Education for Freedom (1943). His earlier books, No Friendly Voice and The Higher Learning in America were published in 1936.

(M. S. Mr.)

Hyde, Douglas

Dr. Hyde (1860—), first president of Eire, historian and poet, was born at Frenchpark, Co. Roscommon, of which his father was Anglican rector. He was professor of modern Irish in the National university from 1909 to 1932. With the possible exception of W. B. Yeats, Dr. Hyde was most responsible for the revival of Gaelic.

Many of his poems, plays, retellings of old legends, etc., were published under his pseudonym, An Craoibhin Aoibhinn ("the delightful little branch," i.e. Ireland). Some months before the promulgation of Eire's new constitution in Dec. 1937, Dr. Hyde, a lifelong Protestant, had been suggested as a nonparty candidate for the presidency. With the support of both Eamon de Valera and William Thomas Cosgrave, leaders of the rival parties, Dr. Hyde was unanimously elected president on May 4, 1938, and was officially installed in office on June 25 of that year. He did not seek re-election when his term expired in June 1945 and was succeeded in office by Seán T. O'Kelly.

Hydrocarbons

See CHEMISTRY.

Hydrology

See GEOLOGY.

Hygiene, Industrial

See Industrial Health.

Hymans, Paul

Hymans (1865–1941), Belgian statesman, was born March 23, 1865, at Ixelles, Brussels. The son of a prominent member of the Belgian Royal academy, and a successful barrister in his own right, Hymans was appointed minister of state on the date that Belgium received the German ultimatum in 1914. He was one of the three ministers to draft his government's reply to the Germans. He served as minister of foreign affairs from 1918 to 1920, 1924 to 1925, 1927 to 1934 and from Nov. 1934 to March 1935, serving thereafter as minister without portfolio.

He died in Nice, France, March 8, 1941.

lbn-Sa'ud

King Ibn-Sa'ud of Saudi Arabia (c. 1880—), was born in Riyadh, the son of 'Abd-al-Rahmān, leader of the Wahhabi sect of Arabs. Ibn-Sa'ud was christened 'Abd-al-'Azīz Ibn-'Abd-al Rahmān Ibn-Faisal Ibn-Sa'ud, but became generally known by the shorter title. After suffering defeat at the hands of Ibn-Rashīd, 'Abd-al-Rahmān, father of Ibn-Sa'ud, went into exile in Kuwait.

In 1901 Ibn-Sa'ud launched his campaign to regain his father's throne. He soon captured Riyadh, his birthplace, proclaimed himself ruler of Nejd, and began to extend his authority over the outlying provinces; by 1914 he had become a potent influence in Arabic affairs. After the outbreak of World War I, Ibn-Sa'ud threw in his lot with the Allies. Circumstances favoured this union because the Turks supported his dynastic rival, Ibn-Rashīd. Although Ibn-Sa'ud engaged in some desultory military operations against the Turks, he was more concerned over domestic rivalries than over the war.

Immediately upon conclusion of the war, Ibn-Sa'ud undertook a new campaign of conquest. He invaded the Hejaz in 1924, defeated King Husain and entered Mecca. On Jan. 8, 1926, Ibn-Sa'ud was proclaimed king of Hejaz; a year later he converted his title of sultan over Nejd to king of the area. In 1932 his kingdom and dependencies were renamed "The kingdom of Saudi Arabia."

During World War II, Ibn-Sa'ud was neutral, although he favoured the British. Toward the close of the conflict, he joined the controversy over establishment of a Jewish homeland in Palestine on the side of the pan-Arabs; he expressed his views on the topic when he visited President Roosevelt on board a U.S. battleship anchored off the Suez canal in Feb. 1945. He journeyed to Cairo, Egypt, in Jan. 1946 for a conference with King Farouk, and the two monarchs jointly declared that "Palestine must remain an Arab country."

Ibn-Sa'ud criticized President Truman's appeal for admission of more Jewish immigrants to Palestine and declared in a letter to the president Oct. 17, 1946, that his statement was in "complete contradiction" to a presidential assurance to the Arabs and "violated" previous promises made to them.

ICC

See Interstate Commerce Commission.

Ice Cream

The production of ice cream in the United States rose steadily from 1937, when the total output reached 280,-901,000 gal., until 1943, when there was a slight recession before another record of 444,277,000 gal. was made in 1944. This increase was due to the lower restrictions on butterfat and total solids. The use of milk-solids in ice cream was limited in 1942, to 75% of the amount used in the base period (Dec. 1941–Nov. 1942) compared with 65% in 1944. Production increased again in 1945 to a new record and in the first half of 1946 the increase was at a much more rapid rate, reaching an annual production of more than 740,-000,000 gal. in 1946. The release of restrictions on milk-solids was favourable to larger production, but the shortage of sugar was a retarding factor.

Production of Ice Cream in United States, 1937-46

(in gailons)																
1937								280,901,000	1942							464,146,000
								281,939,000								411,626,000
								304,522,000								444,277,000
								318,088,000								475,009,000
1941	٠	٠	٠	٠	٠	٠	•	390,175,000	1946	•	٠		٠	٠	٠	740,470,000

The demand for ice cream, far above the supply throughout the war period, was stimulated by the strong buying power of consumers and the changed practices of eating lunches in war plants. The quick-lunch trade was limited by the distributors. The limitations on the sale of cream restricted home freezing. The prewar average per capita consumption was about 10 lb., which had been reached by steady expansion from about 5 lb. per capita in 1933. Consumption was about 16 lb. per capita in 1942, and nearly 18 lb. in 1946. When the restrictions on ice-cream making were imposed in 1943 the production of sherbet jumped at once from 8,772,000 gal. in 1942 to 47,218,000 gal. in 1943 and 49,481,000 gal. in 1944.

Sherbet production then dropped as restrictions on ice cream were removed. Other frozen milk products, developed to meet the shortage of ice cream, became less important in 1946.

The high level of ice cream consumption was expected to continue in the postwar period so long as consumers' incomes were relatively high.

(J. C. Ms.)

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Ice Hockey

Ice hockey, along with ice shows and other forms of entertainment on ice, grew tremendously from 1937 to 1946. Attendance in the National Hockey league, the game's major professional circuit, almost doubled; in 1945–46, more than 2,000,000 witnessed 150 league games.

The Boston Bruins dominated the National Hockey league prior to World War II, winning four successive titles from 1938 to 1941. The Montreal Canadiens, drawing from a population where armed service was not mandatory, came to the fore during and after the war, winning the National Hockey league title from 1943 to 1946.

The Stanley cup, emblematic of world hockey supremacy, was passed among the six National Hockey League cities during the ten-year span—Montreal, Que., Toronto, Ont., Detroit, Mich. and Boston, Mass., each winning it twice, and Chicago, Ill., and New York city capturing it once each. Buffalo, N.Y., and Cleveland, O., dominated the American league; teams from Quebec and Ontario captured five out of nine Allan cups, while skaters from Winnipeg, Man., won four out of ten Memorial cups.

Eight teams composed the National Hockey league in 1937. The Montreal Maroons withdrew in 1938, and the league dropped to six teams in 1942, when the Brooklyn Americans, formerly the New York Americans, retired. Chicago proved a pivotal point of the game as far as gate receipts were concerned, attracting a record 419,924 for 25 home games during 1946 and a single-game crowd of 18,475, largest in hockey history.

Numerous outstanding players were developed during the decade. Eddie Shore, the great Boston defense man, wound up his colourful career in the early years of the era. Two of the finest goal tenders of all time, William Durnan of Montreal and Frank Brimsek of Boston, stood out during the period. The Canadiens offered one of the game's fastest forward lines in Elmer Lach, Maurice Richard and Toe Blake, while the Chicago Black Hawks had an exceptional brother team in Max and Doug Bentley.

Chronology of the Game.—In 1937, the Detroit Red Wings won both the National Hockey league championship and the Stanley cup play-offs, defeating the New York Rangers three games to two in the cup finals. Although the Amateur Athletic union executive committee disqualified teams in the Eastern Amateur Hockey league from the national championships, the tournament was held as a four-team event and was won by the Boston Olympics.

The Chicago Black Hawks led professional hockey in 1938, capturing the coveted Stanley cup in a best four out of seven match play-off with Toronto. Boston finished first in the National Hockey league race, but was beaten in the play-offs for the Stanley cup. A world's amateur hockey championship was conducted in Prague, Czechoslovakia, in 1938, with eight countries represented: Canada won the title. The National A.A.U. championship again was won by the Boston Olympics, an 8–0 victor over the Brock-Hall Hockey club in the final. The American Hockey league championships went to Providence, R.I., in the east and Cleveland, O., in the west.

In 1939, Boston's Bruins dominated professional hockey by winning both the National league championship and the Stanley cup. The Bruins defeated the New York Rangers in the cup finals. Philadelphia, Pa., in the east and the Hershey, Pa., Bears in the west topped the American Hockey league. St. Louis, Mo., won the American association title, with Portland, Ore., the champion of the Pacific Coast league. The Cleveland American Legion defeated the University of Minnesota Gophers in the final of the A.A.U. championship of 1939.

Although Boston won its second straight National league championship the following year, the New York Rangers annexed the Stanley cup in the post-season play-offs. The Rangers defeated the Toronto Maple Leafs in the final. The American league titles went to Providence, R.I., in



Decisive game of the Stanley Cup series April 12, 1938, at Chicago stadium. The Chicago Black Hawks won the championship with a score of 4–1 against the Toronto Maple Leafs

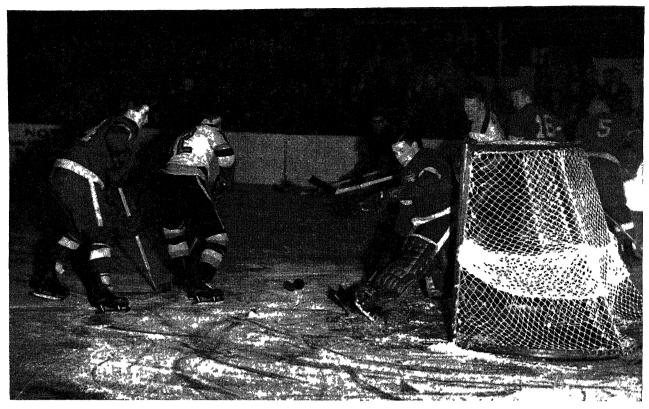
the east and Indianapolis, Ind., in the west. St. Louis repeated as winner of the American association title, while Vancouver, B.C., won the Pacific coast crown. The National A.A.U. championship of 1940 went to the University of Minnesota, Minneapolis, with a final victory over the Brock-Hall team. The Baltimore Orioles won the Eastern Amateur Hockey league title, while the New York Rovers captured the Hershey Challenge trophy. The Allan cup, emblematic of the amateur championship of Canada, was won by the Blue Devils of Kirkland Lake, Ont., with three straight victories over Calgary, Alta., in the finals.

In 1941, the Boston Bruins again won both the National league championship and Stanley cup, defeating Toronto in the trophy play-off. The Washington, D.C., Eagles won the Eastern league title, while Cleveland dominated the American league race. St. Louis once again topped the American association. The St. Nicholas Hockey club won the A.A.U. championships, while the Regina Rangers won the Allan trophy.

The New York Rangers won the National league championship of 1942, but could go no further than the semifinals of the Stanley cup play-offs. The Toronto Maple Leafs captured the cup by defeating the Rangers and then the Detroit Red Wings. Toronto lost its first three matches to Detroit, then won four straight for the world championship. Indianapolis, Ind., defeated Hershey, Pa., three matches to two, in the American league play-off. Omaha, Neb., won the American association championship; the Eastern league title was won by the New York Rovers.

Although the U.S. entrance into World War II affected amateur hockey, most of the important championships had been decided. Boston college won the A.A.U. tournament; the Royal Canadian air force won the Allan cup, while Portage La Prairie, Man., won the Canadian Junior championship. Defense man Tom Anderson of the Brooklyn Americans was judged the most valuable player in the National league, while Frank Brimsek of Boston led the league's goalies.

The Detroit Red Wings completely dominated major professional hockey during 1943, first winning the Na-



off victory with four straight triumphs over the Boston Bruins. John Mowers, winner of the Vezina trophy as the league's outstanding goalie, held Boston scoreless in two of the four final cup matches. Buffalo, N.Y., won the American league championship in 1943. The Eastern Amateur league crown went to the Curtis Bay Coast Guard Cutters. The Ottawa Commandos captured the Allan cup, while Dartmouth was unbeaten in U.S. collegiate competition.

tional league title and then going on to a Stanley cup play-

Bill Cowley of Boston was voted the most valuable player in the National league in 1943, and Doug Bentley of Chicago tied the league scoring record with 73 points.

In 1944, the Canadiens of Montreal reigned completely supreme over the National Hockey league, winning 46 games, tying 5 and losing only 6 in league and Stanley cup campaigns. The Canadiens won eight out of nine play-off matches against Toronto and Chicago. Montreal was unbeaten in 25 home games during 1944. Buffalo, N.Y., retained the American league championship in 1944 with play-off victories over Indianapolis, Ind., and Cleveland, O. The Boston Olympics dominated the Eastern Amateur league with 11 victories and only 1 defeat. The Quebec Aces won the Allan trophy. Walter "Babe" Pratt, Toronto defense man, was judged the most valuable player in the National Hockey league, while William Durnan of Montreal topped the league goalies by holding his opposition to 100 goals.

Canada continued to dominate wartime hockey in 1945, Montreal winning the National league championship and Toronto capturing the Stanley cup. After finishing third in the league race, Toronto defeated Montreal, four matches to two, in the semifinal play-offs and went on to stop Detroit, Mich., in the final series. The Stanley cup windup went the maximum seven games, with Toronto winning the deciding contest, two to one. Minor league hockey in 1945 was again restricted to the American

Opening contest for the 1946 Stanley cup between Detroit's Red Wings and the Boston Bruins, won 3-1 by Boston. The Boston Bruin team lost the cup in the play-off finals to the Montreal Canadiens

league, with Cleveland, O., winning the championship in play-offs with Buffalo, N.Y., and Hershey, Pa. The Seattle Ironmen won the U.S. amateur title in the finals against the Boston Olympics, four games to two. Seattle won the Pacific Coast league campaign, while the Olympics dominated the Eastern league. Elmer Lach, Montreal, was voted the most valuable player in the National league, while the Canadiens' William Durnan repeated as the outstanding goalie.

Reverting to their all-around supremacy of 1944, the Canadiens of Montreal won both the National Hockey league championship and Stanley cup in 1946. Montreal won eight out of nine play-off games to capture the Stan-

The Buffalo, N.Y., Bisons won the American league title for the third time in four years, defeating Cleveland, O., four games to three, in the final play-off. Kansas City, Mo., won the United States league championship. The Boston Olympics won the Eastern league race, but lost to Vancouver, B.C., Pacific coast league champions, in the Amateur Hockey association play-off. Max Bentley of Chicago was voted the league's most valuable player, while Bill Durnan won his third straight Vezina trophy as hockey's leading (M. P. W.)

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Iceland

An island republic of the North Atlantic, Iceland has an area of 39,709 sq.mi.; its population in 1939 was estimated at 120,264. Capital, Reykjavik, the only large town

(pop. 1939, 38,219). Religion, Lutheran Christian. Hereditarily united with Denmark, Iceland became an independent state Dec. 1, 1918, legally united with Denmark only by recognition of a common king. After April 9, 1940, the executive power was wielded by the Icelandic ministry, headed by a regent (Sveinn Bjornsson, after May 17, 1941). At first the coalition cabinet had no chief minister; after the fall of 1941 Hermann Jonasson so acted; he was succeeded by Olafur Thor in May 1942; Dr. Bjorn Thordarson became chief minister in a nonpartisan government on Dec. 16, 1942. Olafur Thor formed a coalition government with a six man cabinet-two each from Conservative, Social-Democratic and Communist parties, on Oct. 21, 1944. Sveinn Björnsson became president for one year on June 17, 1944, and was later re-elected for the additional regular four year term ending in 1949.

Independence.—For more than 300 years after establishing its constitution in A.D. 930, Iceland had been vigorously independent. Internal strife brought evil days and an agreement to unite with Norway for the sake of order. It was an agreement subject to cancellation by the free men of Iceland if the king of Norway should break it; but it lasted, and in 1280 Iceland as well as Norway became united with Denmark. Under changing conditions that association lasted down to World War II. In the 19th century Jón Sigurdsson and others led a long fight for Icelandic independence. Jón Sigurdsson emphasized Iceland's historic right to independence and insisted upon the revival of the power of the Althing, the famous legislative body of the country, oldest parliament in the world. The Althing was re-established in 1843, and home rule was granted Iceland in 1903. The next step forward was taken on Dec. 1, 1918, after the end of World War I, with the Danish-Icelandic Act of Union:

Denmark and Iceland shall be free and sovereign states united under a common King, and by the agreement contained in this Law of Union; the names of both states shall be indicated in the King's title.

Denmark was to handle Iceland's foreign affairs as its attorney, but otherwise the island state was almost completely independent, creating its own supreme court and gradually taking over control of fisheries inspection and other aspects of administration.

The Act of Union provided for its own possible termi-

Record gale off the shores of Iceland in Jan. 1942 all but swamped this U.S. navy supply ship dragging its anchor along the coast nation at the end of 25 years. The process was to be complex, requiring first three years of negotiations, then a two-thirds vote in each house of the Danish Rigsdag and in the Althing, and confirmation by a three-fourths majority of the voters in an election in which at least three-fourths of the eligible voters participated. But the Icelanders were not stopped by the complexities, and war made it all easy. The political parties in the Althing had declared for complete independence in 1928; in 1937 the Althing instructed the government to prepare for the independent handling of foreign affairs.

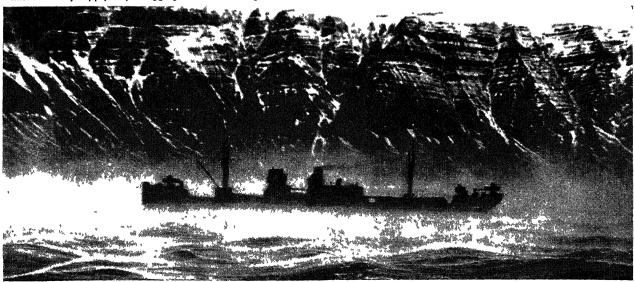
When Denmark was invaded by the Germans on April 9, 1940, the Icelanders were forced to take some kind of action. On April 10 the Althing vested executive power in the cabinet, because the king of Denmark could not act; and it resolved to take over the conduct of foreign affairs. The next step was taken on May 17, 1941, with passage by the Althing of three resolutions:

(1) The Althing resolves to declare that Iceland has acquired the right to abolish entirely the Act of Union with Denmark, since Iceland has had to take into its own hands the conduct of all of its affairs, and since Denmark is not in a position to attend to the matters on behalf of Iceland which were agreed to under the Danish-Icelandic Act of Union of 1918. On the part of Iceland there shall be no question of renewing the Act of Union with Denmark, although it is not thought expedient in the present circumstances to effect the formal abolition of the Union, nor to establish the final constitution of the State, but these will not be postponed beyond the end of the war.

(2) The Althing resolves to appoint a regent, for a period of one year (term of office subsequently extended) to wield Supreme Power in matters of state which were placed in the hands of the Cabinet on April 10, 1940.

(3) The Althing resolves to announce its will that a republic be established in Iceland as soon as the Union with Denmark has been formally dissolved.

Sveinn Björnsson, longtime Icelandic minister in Copenhagen, was chosen regent, and on May 20, 1941, Iceland served on Denmark formal notice of her desire to end the union. On Feb. 25, 1944, the Althing again resolved to end the union, subject to approval by the electorate. In the plebiscite of May 20–23, 1944, more than 98% of the citizens voted, including Icelanders abroad who rushed to their consulates to record themselves. On the abrogation of the union 71,122 voted yes, 377 no. Then by a vote of 69,435 to 1,051, the republican constitution adopted by the



Althing was accepted. The republic of Iceland was proclaimed June 17, 1944, the birthday of Jón Sigurdsson, and a tremendous national celebration greeted the event on the ancient field of the parliament meetings—Thingvellir. In New York City, N.Y., 270 Icelanders and their descendants gathered to celebrate the great event.

Denmark, still under the heels of the nazis, was hardly in a mood to celebrate an event such as the breaking away of Iceland. But on June 17, King Christian X sent a telegram of acceptance and good wishes to the Icelanders, and their cup of happiness was full as they sang the Danish royal anthem as friends but not as subjects.

The union of Denmark and Iceland would doubtless have ended in due course in some fashion; unquestionably World War II, which overwhelmed Denmark and thrust Iceland into new complexities, both simplified and speeded the process of independence.

Role in World War II.—Iceland, an innocent bystander in the rivalries of diplomacy and war, had always been far enough from the centre of strife to avoid involvement, until World War II. Then the position was changed. Mass armies, air armadas and critical supply routes made weather reporting more vital than ever, and Iceland was a significant point for such reports. The position of the Germans in Norway revolutionized the North Atlantic strategic situation, and made Iceland a bulwark on Britain's flank, as well as a potential base for naval or air operations in the Atlantic. After the U.S.S.R. had been drawn into the war, Iceland became a crucial position on the long and dangerous convoy route to Murmansk. And the island was, most important of all, the natural half-way point on the North Atlantic run between the U.S. and Great Britain. Geography had once isolated it; geography now, under changed conditions, drew it into the vortex of trouble.

The British foresaw some of the future importance of the island, and realized that after the occupation of Denmark and Norway by Germany, it would be natural for the Germans to try to establish their position in Iceland too. Hence, on May 10, 1940, British troops landed in Iceland, and a force of 60,000–80,000 was maintained there in order to keep the Germans from using it as a base for offensive action.

The British did not interfere with the government or freedom of speech, and the Icelanders while none too friendly, tried to believe that the British soldiers would evacuate as soon as the war ended. The occupation created social problems among a people only twice as numerous as the garrison itself, but it also stimulated business. Icelandic ships continued to operate, and the country sold its entire output of herring meal and herring oil, and the catch of cod, to Great Britain.

The U.S. "Occupation."—Early in July 1941, United States marines landed on the island, to be re-enforced later by more U.S. troops in unknown number. The step was taken after consultations between the British and United States governments, and a direct exchange of messages between Pres. F. D. Roosevelt and Prime Minister Hermann Jónasson of Iceland. Jónasson set up eight conditions for the admission of U.S. forces, and Roosevelt accepted them. Chiefly they were: recognition of Icelandic independence and sovereignty both at the time of occupation and after the war; organization of defense with sufficient force and matériel, and by picked men; arrangements to assure Iceland's markets and supplies.

The prime minister's message stipulated that "The U.S.

promises to withdraw all their military forces, land, air, and sea, from Iceland immediately on conclusion of present war." Pres. Roosevelt in his reply carefully repeated verbatim all the other stipulations, but to this one added his own phrasing. "That immediately upon the termination of the present international emergency, all such military and naval forces will be at once withdrawn, leaving the people of Iceland and their government in full sovereign control of their own territory." Roosevelt envisioned the possibility of just what happened; that the end of war would not end the "international emergency." But here were seeds for misunderstanding.

British forces were diminished as the U.S. troops arrived, and were withdrawn entirely by the autumn of 1942 Relief of the British and closer guarding by the United States of its sea lanes were the primary reasons for the move. The question remained undetermined whether Iceland belonged in the western hemisphere or the eastern By August the U.S. troops were comfortably established in heated corrugated iron huts, with ample supplies of clothing and food.

The threat from Germany was dramatized in Aug. 1941, when a nazi bomber appeared, and many times later as damaged merchant naval vessels limped into the harbour of Reykjavik. Despite the obvious danger, and despite a favourable commercial agreement with the United States reached in Aug. 1941, people were discontented with conditions, especially with rising living costs. Disputes increased, and in October the ministry resigned. Nine days later (Oct. 31) it returned to office after an appeal from the regent. War and military occupation disturbed the price balance profoundly. In Reykjavik the cost of living index soared (using Jan.-March 1939 as 100) from 146 in Jan. 1941 to 183 in Jan. 1942, and up to 272 in Sept 1942. But the country began to increase its imports, and the price line did not get completely out of hand. The index was down to 259 in Nov. 1943, but up again to 285 in the spring of 1946. An important factor was that wages rose automatically each month on the basis of the official index of prices published by the bureau of statistics. This aroused political controversy and the proposal to reduce the compensatory rise to 80% of the index.

Relations between the occupying troops and the people of Iceland were in general very friendly. The British and U.S. generals were evidently able administrators-Gen. Henry Osborn Curtis of Great Britain was replaced in command of the U.S. and British forces in April 1942 by Maj. Gen. Charles H. Bonesteel of the U.S.; he in turn was replaced by Gen. William S. Key (U.S.) in June 1943, and Gen. Early E. W. Duncan (U.S.) took command in Dec. 1944. It was Gen. Key particularly who revised the policy of segregation of troops and civilians and through lectures on Iceland to the troops and by other means developed a more sympathetic mutual understanding. A few tragic incidents had occurred, such as the shooting in the back of an Icelandic boy by a U.S. soldier. More numerous were the evidences of good feeling such as the marriages between U.S. soldiers and Icelandic girls.

In many ways the bystander got hurt. Nazi planes sank many Icelandic fishing vessels, and finally its two important passenger ships, the "Godafoss" and the "Dettifoss," leaving the country dependent on U.S. planes for travel between Iceland and U.S.

Iceland's economic activities were affected by other things than war. Refrigeration, for example, practically stopped the export of salt fish, and the great product became frozen fish. At the close of World War II, Great Britain, Iceland's best customer, announced that it would



Snow-covered street in the camp of the U.S. Iceland Base command

need none of Iceland's fish in 1946, and the Icelanders hurriedly sought markets in central Europe and the U.S. During the war Great Britain had continued to buy most of Iceland's output, but Iceland purchased its imports increasingly from the U.S. War co-operation brought an arrangement by which the U.S. paid for Britain's purchases with U.S. dollars, but such a policy could not continue. Iceland looked hopefully to Russia as a future market, and in May 1946 signed a trade treaty with the U.S.S.R.

One of the great events of the wartime period was the completion in 1945 of the great project of heating the homes of Reykjavik by water piped in from the hot springs some 12 miles away. Some of the work had been completed when war broke out, and the materials for much of the rest lay ready to ship in Denmark. Despite British and German pledges of free passage, one vexatious delay piled on top of another. Substitute piping was bought in the U.S., and then the ship bringing it was torpedoed. But at last the job was done, especially important for Iceland because of its long heating season and the fact that all coal had to be imported. Furthermore, the water piped in was medicinally useful for baths, and valuable for greenhouse use-even bananas could be raised with its aid. New hydroelectric plants were built with equipment from the U.S.

Other Wartime Events.—During the war the roads of Iceland were greatly improved, and a considerable amount of building was completed. Millions of dollars were set aside for postwar replacement of fishing vessels; 55 motor fishing ships were ordered in Sweden, 20 steam trawlers in England, 30 schooners in Iceland; larger ships were contracted for in Denmark and England.

The Roman Catholic Church in 1943 appointed Jóhannes Gunnarsson bishop of Iceland—the second Catholic

bishop after Lutheranism became the state religion in 1550.

A careful work of mapping the entire island, begun in 1900, was completed in Copenhagen during World War II. All of Iceland was accurately and beautifully mapped on a scale of 1:100,000.

Art enjoyed a boom in Iceland, and literary production increased especially because of the wartime cutting off of other Scandinavian literature. A choice of the Book of the Month club in the U.S. was an Icelandic novel, Halldór Laxness' Independent People. Perhaps the most important work in the country during the period was Prof. Sigurdur Nordal's Islenzh menning (The Culture of Iceland).

The people of Iceland had always taken their politics very seriously, but there was little shifting in the power of the parties during the decade. In the elections of June 1946, the opposition Progressives lost two seats to the Social Democrats, a government party, but otherwise the balance remained as it had been. The new voting strength and position in the Althing was as follows: Independence party, 26,428 votes, 20 seats; Progressives, 15,072 votes, 13 seats; Communists, 13,049 votes, 10 seats; Social Democrats, 11,911 votes, 9 seats.

Postwar International Relations.-Iceland was not invited to the San Francisco conference because it had not declared war on Germany or Japan. Actually there had been acts of war against Iceland by Germany, but Iceland valued the permanent neutrality it had declared in 1918, and would do nothing to weaken its legal position. Iceland did participate in some of the other international conferences such as Bretton Woods and the air conference in Chicago, Ill., where it had four delegates. In the latter conference, its position had real importance, and it was this position with relation to air routes which led to the later complications of the country in world affairs. When Iceland became independent, Sweden particularly feared that it meant withdrawal from Scandinavian ties of culture and trade. But the Icelanders emphasized that they valued and intended to continue their Scandinavian connections, while at the same time playing an independent role in the family of nations. Iceland joined the International Labour organization. Iceland also entered into special trade agreements with Sweden, the U.S., and other countries. On July 26, 1946, Iceland voted to apply for admission to the United Nations, and was one of the states approved by unanimous vote of the Security council on Aug. 29.

The great problem of 1946 was the use of Iceland's U.S. built airfields. Rumours had floated about for months, and protests against U.S. "imperialism" in Iceland had come out of Moscow. On April 26, 1946, it was announced in Iceland that on Oct. 1, 1945, the U.S. had asked to open negotiations with the Icelandic government regarding future bases. Icelandic officials discussed the proposal, but averred that they were not ready to negotiate. Hence the matter had been dropped for some months. In 1946 talks were undertaken and an agreement was reached; the U.S. would be allowed to use Keflavík áirfield until the end of the occupation of Germany; the U.S. would leave some operating personnel at the fields, but withdraw its naval and military occupying forces.

In Sept. 1946 when this agreement came up for discussion in the Althing, hot debate ensued. The Communists, who for nearly two years had co-operated in the cabinet, threatened to leave if the agreement was ratified. Conserva-

*1945.

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Finance						9	\$25,002*
Government revenues			• •	. \$4,381 (£896)			(£6,204)
Government expenditures .							\$22,116*
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Gold reserves				\$246			\$882* (£219)
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National debt			•	(£2,122)			(£1,900)
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Potatoes			•		6,450 "		6,275 "
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Livestock							£20 004
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Poultry			• •	•	89,664 49.018	55,876	60.363
Horses			•	•	36,696	39,732	36,415
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Sea products Cod				_	60,998 tons	1	
Cod and shark liver oil				•	2,714,188 gal.	•	
Coalfish					10,012 tons	1	
Plaice and other flatfish .			• •	•	1,770 "		
Exports				610.000	175,000 tons		\$39,084 259,000 tons
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Iceland. Statistical Data

tive and Social Democratic organs expressed approval, feeling that essential control would be in the hands of Icelanders anyway. The Communist paper said that the agreement would make Keflavík a camouflaged base for the U.S. A mob of some 200 people attacked the mayor of Reykjavik, Bjarni Benediktsson, as he was leaving a meeting where Conservative party leaders had spoken in favour of the agreement. Prime Minister Thors, who had made a speech, had a police escort from the hall. The police urged the mob to disperse, but there was no movement until a Labour spokesman announced plans for a general strike in protest against the treaty. The strike, under the leadership of the Federation of Icelandic Trade Unions, began at noon on Sept. 23, to last 24 hours. At a Communist outdoor meeting the air base agreement was called "a surrender of Icelandic

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In Washington the state department announced that an agreement had been signed whereby U.S. troops would depart from Iceland within 180 days, leaving only civilian personnel at the Keflavík airport, which was to be used as a transit point for planes to and from Germany. The navy department said it would begin evacuation of its forces on Sept. 23, and the war department stated its readiness to begin removal of army forces as soon as the state department submitted a request.

The strenuous opposition in Iceland was not strong enough to prevent ratification of the agreement, which passed in the Althing on Oct. 5, by a vote of 32-19, despite riots and the threat of the Communists to leave the government. A few days after the vote in the Althing the cabinet split and resigned (Oct. 10, 1946).

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Ice Skating

Hampered by World War II and the lack of Olympic game competition, speed and figure skating nonetheless held its place in the sports firmament from 1937 to 1946. Figure skating especially grew in popularity with the introduction of three major and several minor ice shows Such former world and national champions Sonja Henie, Robin Lee, Maribel Y. Vinson and Bobby Specht featured the specialty numbers in

various professional ice shows.

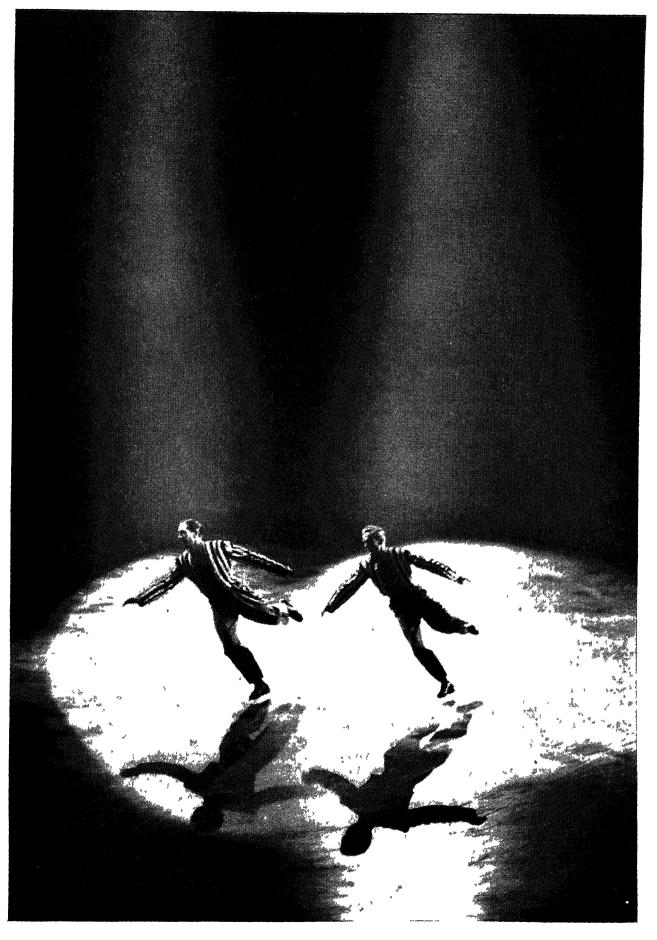
Minneapolis, Minn., and Chicago, Ill., completely dominated the men's national speed skating championships over the ten-year period. Outstanding men's skater of the era was Ken Bartholomew, who won three national championships before entering the army in 1942.

The nationals were cancelled in 1943, 1944 and 1945 because of the war.

Except for a two-year reign by Carmelita Landry of Fitchburg, Mass., the women's national speed skating titles were the legacy of mid-westerners. Madeline Horn of Beaver Dam, Wis., dominated the women's division prior to 1941, while Mrs. Elaine Bogda Gordon of Chicago was returned as champion when the nationals were revived in 1946.

The 1937-46 era in figure skating marked the close of a nine-year championship reign by Maribel Y. Vinson and the supremacy of Joan Tozzer of Minneapolis, Minn, Mrs Jane Vaughan Sullivan of Philadelphia, Pa., and Gretchen Merrill of Boston, Mass. Miss Tozzer won three titles from 1938 to 1940; Mrs. Sullivan captured the 1941 and 1942 championships, and Miss Merrill, a 'teen-aged member of Boston society, won successive championships from 1943 to 1946.

Robin Lee concluded a string of five successive men's national figure skating titles in 1939, turning the championship over to Eugene Turner of Los Angeles, winner in 1940 and 1941 Robert Specht of Chicago and Arthur R. Vaughan Jr. won the next two years, after which the men's national championships were by-passed until Rich-





Robert Fitzgerald of Minneapolis, Minn., (left) who won the North American speed skating championship at "Schenectady, N.Y., on Jan. 27, 1946. He is shown leading in the senior men's three-quarter mile event

ard Button of Philadelphia captured the revival in 1946. England took charge of the women's world figure skating championship upon the retirement from amateur competition of Miss Henie, a ten-time winner up to 1937. Cecilia Colledge brought the title to England in 1937, and Megan Taylor won the championship in 1938 and 1939. No competition was held from 1940 to 1946. The 1937 and 1938 men's world title went to Flex Kaspar of Austria, while Graham Sharp of England won in 1939.

Numerous national records were broken during the decade. Robert Fitzgerald of Minneapolis set a mark of 18.1 sec. for 220 yd. in 1943, and shared the 440-yd. record of 35.4 sec. with Charles Gorman and Bartholomew. Ross Robinson's time of 14 min., 30.4 sec. for the five-mi. event, set in 1937, was the other outdoor record broken during the ten years.

In the women's division, records were established in four of the five distances from 220 yd. to 1 mile. Miss Horn set three of them, setting marks of 20.2 sec. in the 220, 1 min., 25.9 sec. in the 880, and 3 min., 6.1 sec. in the 1 mile. Mrs. Dorothy Franey Drolson of St. Paul, Minn., set a three-quarter mile record of 2 min., 17 sec. in 1937.

The season of 1937 marked the dominance of two veteran skaters in national speed events. Marvin Swanson of Minneapolis won his third straight men's senior title, while Miss Horn won the women's crown. The national figure skating championship, held in Chicago to mark its first appearance away from the Atlantic seaboard, was won by Lee, then 17 years of age, and Miss Vinson.

Vic Ronchetti of Chicago arose for a one-year dominance of men's speed skating in 1938, winning the national and North American outdoor and North American indoor titles. Miss Tozzer started the first year of her three-year championship reign by winning the women's senior figure skating crown. Lee repeated in the men's division.

Bartholomew came into his championship own in 1939

with the first of his three national senior speed titles. Miss Horn was first in both the women's national and North American, with Charles Leighton of Minneapolis winning the men's North American. Both Lee and Miss Tozzer repeated as national figure skating champions, after which Lee turned professional.

Miss Tozzer not only won her third national crown in 1940, but repeated as national pairs champion with Bernard Fox, also of Boston. Eugene Turner of Los Angeles replaced Lee as men's senior champion. Leo Freisinger, a member of the 1936 Olympic games team, won both the national and North American speed trials. Miss Horn also scored a double in the women's phase of the meets.

Bartholomew came back to capture both the national and North American titles in 1941. Halting the long dominance of Miss Horn, Miss Landry won the women's national speed championship. Miss Vaughn, a University of Pennsylvania coed, started a two-year reign as women's national figure skating champion, while Turner repeated as men's titlist.

Bartholomew and Miss Landry dominated speed skating in 1942, each winning national and North American championships. The former Miss Vaughn, having become Mrs. Sullivan, retained her women's national figure skating championship, while the men's crown went to Bobby Specht of Chicago. Specht turned professional after winning the title.

Only one national senior skating championship—the women's figure championship—was contested regularly from 1943 through 1945. All national speed competition was wiped out because of the war, while the national men's figure event was held in 1943 and then cancelled until 1946. Arthur R. Vaughn, Jr., a brother of the former women's champion, won the figure title in 1943. The national women's figure skating crown was wholly in custody of Miss Merrill, who won four straight championships from 1943 to 1946.

The return of national competition brought new champions in all divisions except women's figure skating. Bob Fitzgerald, a 22-year-old air corps veteran, defeated Bartholomew in the men's speed. Mrs. Gordon won the women's speed title, while Richard Button of Philadelphia annexed the men's figure skating crown. (M. P. W.)

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Ickes, Harold L.

Ickes (1874—), U.S. statesman, was born March 15, 1874, at Frankstown Township, Pa., and graduated from the University of Chicago in 1897. After spending several years as a Chicago newspaper reporter and engaging in local politics, he set up legal practice in 1907. After assuming office in 1933, President Roosevelt selected Ickes as his secretary of the interior.

In July of the same year Ickes was also appointed head of the Public Works administration. In succeeding years of the New Deal, Ickes held a multitude of other posts; he became solid fuels administrator in Nov. 1941, coal mines administrator in 1943 and petroleum administrator for war in Dec. 1942. Ickes was an ardent New Dealer and opponent of big business. In Feb. 1944, for example, he led a vigorous, although unsuccessful, campaign for the building of an oil pipe line across Arabia, a project which was bitterly opposed by U.S. oil companies. He was also much concerned with his belief that there was no

genuine freedom of the U.S. press which, he charged, was controlled by financial and business interests. As a result of a dispute with President Truman over the appointment of Edwin W. Pauley as undersecretary of the navy, Ickes resigned as interior secretary on Feb. 13, 1946. He then accepted an offer to write a daily column for the New York Post. Among his later publications were: Back to Wolk (1935); New Democracy (1934), America's House of Lords (1939), Freedom of the Press Today (1941), and Autobiography of a Curmudgeon (1943).

Idaho

One of the far northwestern states of the U.S., Idaho was admitted to the union on July 3, 1890; popularly known as the "Gem state." Area, 83,557 sq.mi., pop. (1940) 524,873, of which 66.3% was rural, 33.7% urban. On July 1, 1944, the bureau of the census est. the pop. at 531,573. There were 3,537 Indians in the state in 1940. Principal cities (1940) are Boise, the capital (26,130), Pocatello (18,133), Idaho Falls (15,024), Nampa (12,149) and Twin Falls (11,851).

Principal state officers in 1937 were: governor, Barzilla W. Clark; lieutenant governor, Charles C. Gossett; secretary of state, Ira H. Masters; attorney general, J. W. Taylor; chief justice, Raymond L. Givens; treasurer, Myrtle Enking; auditor, H. A. Parsons; state mining inspector, Arthur Campbell. Sen. William E. Borah was returned to Washington, D.C., for the sixth time, having defeated his opponent by a substantial majority. In the biennial elections of Nov. 1938 a Republican governor and legislature were elected. Idaho's governors had been Democratic from 1932, and after 1934 all governmental branches were controlled by that party. Principal state officers were: governor, C. A. Bottolfsen; lieutenant governor, Donald S. Whitehead; secretary of state, George H. Curtis; attorney general, J. W. Taylor; chief justice, James F. Ailshie; treasurer, Myrtle Enking; auditor, Calvin E. Wright; state mining inspector, Arthur Campbell. D. Worth Clark (Dem.) was elected U.S. senator; Henry Dworshak (Rep.) was elected representative from the second district and Compton I. White (Dem.) from the first district.

The 1939 session of the state legislature, which met from Jan. 2 to March 2, enacted 270 laws. Important measures passed were those authorizing the establishment of civil service tenure for certain nonelective state employees; an automobile driver's financial responsibility law; humanitarian occupational disease measures; reduction of passenger car licence costs to \$5, the loss of revenue to highway districts being compensated for by revenues from the state highway department; appropriation of \$1,000,000 for the equalization of educational opportunity between school districts with adequate funds and those without; and a law providing for the creation of locally-financed junior college districts.

In the presidential election of 1940, Roosevelt received 127,842 votes and Willkie 106,553. In the state elections a Democratic governor and a Democratic legislature were elected, while a Republican, John Thomas, was sent to

the U.S. senate. Compton I. White (Dem.) and Henry Dworshak (Rep.), represented the two congressional districts. Sen. Thomas succeeded Sen. Borah, who died in Jan. 1940. State officers for 1941–42 were: Chase A. Clark, governor; Charles C. Gossett, lieu-

tenant governor; George H. Curtis, secretary of state; Bert H. Miller, attorney general; Calvin E. Wright, state auditor; C. E. Roberts, superintendent of schools; Arthur Campbell, state mining inspector. No general election was held in 1941 and the legislature was not in session.

In the 1942 elections, held Nov. 3, the following state officers were elected: governor, C. A. Bottolfsen; lieutenant governor, Edward Nelson; secretary of state, George H. Curtis; attorney general, Bert H. Miller; auditor, Calvin E. Wright; superintendent of schools, C. E. Roberts; state mining inspector, Arthur Campbell; treasurer, Myrtle Enking. The governor and both houses of the legislature were Republican. The principal subject of controversy in the new legislature, which convened on Jan. 4, 1943, was the old-age pension act adopted in 1942 on an initiative vote. The legislature "repealed" the act and Gov. Bottolfsen approved and signed the repeal. Supporters of the pension immediately began a movement for the recall of the governor and members of legislature who had given their support to the repeal, but no definite action was taken.

Principal state officials elected in the general election of Nov. 1944 were the following: governor, Charles C. Gossett; lieutenant governor, Arnold Williams; secretary of state, Ira H. Masters; attorney general, Frank Langley; auditor, Earnest G. Hansen; superintendent of public instruction, Grover C. Sullivan; treasurer, Ruth Moon; mine inspector, Arthur Campbell. Also elected were Edwin M. Holden and Bert H. Miller, supreme court justices; Glen Taylor, U.S. senator; and Compton I. White, con-

			ldaho-	Statistic	al Data			
			Table I.—	-Educatio	n (public)			
				1938	1940	1942	1943	1945
Elementary pupils				88,513	86,829	79,771	80.572	80,572
High school pupils				32,898	34,158	30,586	28,007	28,007
Elementary teachers High school teachers		٠		2,965 1,324	3,107 1,405		3,802 1,326	3,802 1,326
riigii sciloor reactier.		•		1,024	1,400		1,020	1,320
			Table II.	Public	Welfare			
	(M	one	y figures	in thouse	inds of do	ollars)		
	•		, -	1937		1939	1940	1941
Cases on general re	elief .			2,700	3,100			
Cost of general reli	ef			\$35	\$53	\$27	\$32	\$19
Recipients of old-ag Cost of old-age per		ion	s		8,869 \$191		8,933 \$196	
Blind receiving aid			::::		300		278	
Workers under uner compensation .					60,032	62,835	65,600	
Dependent children	receivi				6,365		7,109	
•		Ī						
			Table III.	—Сотти	ınications			
			1937	1938	1939	1941 1	942	1945
Highway mileage		•		4,873				210
Railroad mileage	• • •	٠	2,854	2,854	2,836	2,894 2,	890 3,0	000 (est.)
•				0	1 5%			
				-	and Financ			
	(Me	one	, -		nds of do			
			1937	193			940	1941
State revenue	• • •	٠	\$18,805 \$18,210			,760 \$,486	14,053	\$14,915
State expenditure Number of banks	: : :	:	53	Ψ17,2	52	50	50	
Total deposits			\$94,300	\$88,4			00,400	
Number of national	panks	•	20		20	18	18	

		Table V	-Agriculture											
(All figures in thousands)														
	1937	1939	1941	1942	1943	1944	1945							
alue of crops	\$65,348	\$57,229	\$89,587	\$134,660	\$166,659	\$167,488	\$141,000 (est.)							
Barley	3,708	5,580	11,400	14,280	12,716	12,728	11,840							
Dry beans, cwt	1,836	1,501	1,888	2,234	2,479	2,088	1,726							
Corn	1,332	1,138	2,385	2,444	1,683	1,581	1,334							
Hay, tons	2,249	2,160	2,391	2,141	2,189	2,148	2,103							
Oats	4,960	6,232	6,680	7,898	7,400	7,308	6,806							
Potatoes	30,380	28,520	27,450	30,590	43,470	36,675	44,220							
Sugar beets, short tons	615	985	820	1,076	608	629	800							
Wheat	28,360	21,311	27,822	20,770	22,720	30,309	30,696							

Idaho: Statistical Data (continued) Table VI.—Manufacturing

(Mone	y figures in	thousands	of dollars)		
		1935	1937	1939	1940
		9,635 \$10,738 \$64,988	12,797 \$16,250 \$101,325	10,877 \$12,754 \$90,475	12,79 7 \$16,250
Ta	ble VII.—M	lineral Prod	uction		
	(All figures	in thousan	ds)		
193 <i>7</i>	1938	1939	1941	1942	1943
\$40,633	\$31, 7 39	\$33,139	\$41,358	\$46,063	\$43,910
\$15,151 12,238 7,046 2,865	\$12,279 8,480 4,227 3,623			\$10,414 15,264 16,230 3,326	\$8,299 14,223 19,605 1,120
	1937 \$40,633 \$15,151 12,238 7,046	Table VII.—M (All figures 1937 1938 \$40,633 \$31,739 \$15,151 \$12,279 12,238 \$4,220 7,046 4,220	1935		1935 1937 1939

gressman, first district. The above were all Democrats. Henry M. Dworshak (Rep.) was re-elected congressman for the second district, and both houses of the newly-elected legislature were Republican by small majorities, but nationally the state went Democratic. Presidential electors: Democrats 107,399; Republican 100,137. All state offices were carried by Democratic majorities of 4,000 to 12,000.

The legislative body elected in 1944 convened in Jan. 1945. Principal legislation dealt with problems of postwar planning. Upon the death of Sen. Thomas on Nov. 10, 1945, Gov. Gossett resigned and Lieut. Gov. Williams automatically assumed office. Williams immediately appointed Gossett to the U.S. senate to fill the vacancy left by the death of Sen. Thomas.

New state officers elected in Nov. 1946 (all Rep.) were: governor, C. A. Robins; lieutenant governor, Donald S. Whitehead; secretary of state J. D. Price; attorney general, Robert Ailshie; auditor, N. P. Neilson; treasurer, Leila D. Painter; superintendent of public instruction, Elton Jones. Large Republican majorities were elected to both state senate and house.

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Illinois

A north central state of the United States, Illinois was admitted to the union in 1818, popularly known as the "Sucker state," or the "Prairie state." Total area, 56,400 sq.mi., of which 55,947 sq.mi. are land. Pop. (1940) 7,897,-241, of which 7,504,202 were white and 393,039 nonwhite. Pop. classed as urban was 5,809,650, rural not on farms 1,119,488, rural farm 968,103. Springfield, the capital and fifth largest city, had a pop. of 75,503 in 1940. Chicago (3,396,808) is the largest Illinois city, followed by Peoria (105,087); Rockford (84,637); East St. Louis (75,609).

The 6oth general assembly, which had a Democratic majority in both houses, convened from Jan.-June 1937. Important measures passed during the session were: an eight-hour law for women workers; a new insurance code; marriage laws requiring a medical examination for both parties and a three-day period between application for and issuance of the licence. A 3% tax on public utility sales was passed to replace one that had been declared unconstitutional, and the 3% sales tax was extended to Feb. 15, 1939, after which it reverted to 2%. Permanent registration of voters, instituted in 1935 for ten cities, was extended to all of Cook county (Chicago). Other legisla-

Night work on the Anderson Ranch dam in Idaho during 1945. Located in the Boise valley, it was to be the world's largest earthfilled dam when completed

tion established machinery for the administration of unemployment insurance and old-age assistance. The life of the Illinois Emergency Relief commission was extended to July 1, 1939. State officers were: Henry Horner, governor; Edward J. Hughes, secretary of state; Edward J. Barrett, auditor; Otto Kerner, attorney general; John Stelle, lieutenant governor; and John C. Martin, treasurer. All these officers were Democrats.

In 1938, two special sessions of the general assembly were called to deal primarily with exhausted relief funds in Chicago, and relief deficits elsewhere. An appropriation of \$4,500,000 was made; funds were provided out of general revenue, after proposals for new taxes were defeated. Additional funds were obtained by continuing the 3% tax on utilities until July 1, 1939, when it became 2%. A driver's licence bill was passed, requiring no immediate examination for applicants, but providing for accident liability. A proposal to call a constitutional convention was defeated.

Gov. Horner was kept from office by ill health during the latter part of 1938 and early part of 1939. His duties were taken over by Lieut. Gov. Stelle. Sen. James Hamilton Lewis died on April 9, 1939, and James M. Slattery was appointed to succeed him pending the Nov. 1940 election. Bills introduced by Sen. Hickman repealing some 400 obsolete laws were passed.

Lieut. Gov. John Stelle assumed the governorship after Gov. Horner's death on Oct. 6, 1940. A critic of the Horner administration, Stelle made numerous replacements of appointive officers, among whom were five directors of administrative departments. In 1940 the heaviest Illinois vote on record (4,262,196) gave a majority to Roosevelt for the presidency (Roosevelt 2,149,943; Willkie 2,047,240), but elected from the Republican roster a U.S. senator, C. Wayland Brooks, to finish the term of the late J. Hamilton Lewis; other Republicans elected were 16 out of 27 congressmen; all state officers with one exception; and a majority in both houses of the general assembly. Based on the 1940 census, Illinois was to lose one seat in congress by federal reapportionment in 1943. New state officers were Dwight H. Green, governor; Hugh W. Cross, lieutenant governor; Edward J. Hughes (Dem.), secretary of state; A. C. Lueder, auditor; Warren Wright, treasurer; George F. Barrett, attorney general. The general assembly

Illinois: Statistical Data

		Ta	ble I.—Edu	ication (Publ	lic)		
		1936	1938	1940	1943	1944	1945
		. 351,582 33,826	347,382 32,278	40 122	,281,854 45,438	883,781 1 361,645	,160,956 343,332 33,853 10,441
		To	able II.—Po	ublic Welfa	re		
		(Money	figures in t	housands of	f dollars)		
		1937	1938	1939	1940	1941	1943
	Cases on general relief	182,706	178,377	186,684	148,035	113,900	
	Cost of general relief	\$4,252	\$4,326	\$4,11 <i>7</i>	\$3,650	\$2,454	
age Cost o	Recipients of old- age pensions Cost of pensions		124,392 \$2,304		138,291 \$2,891		147,637
	Dependent children receiving aid Blind receiving aid Workers under un-		1 <i>7</i> ,000 <i>7,</i> 700		17,000 7,700		
	employment com- pensation	1	,603,086	1,591,382	1,666,900)	*
		Ta	ble IIIC	ommunicatio	ns		
		(Money 1	figures in t	housands of	dollars)		
		1 <i>937</i>	1938	1939	1943	1944	1945
	Highway mileage . Expenditure on		11,887	11,566			
	highways Railroad mileage .			\$68,549 11,981	\$50,799 11,500		

Illinois. Statistical Data (continued) Table IV.—Banking and Finance (Money figures in thousands of dollars)

1937

				73/	1707	.,	
State revenue State expenditure Number of banks .			\$17		275,406 165,883 855	\$270,148 841	ı
Total deposits			\$3,90	9,200 \$4	,432,900	\$5,034,900)
Number of national Deposits of national		::::	\$2,78	314 31,484 \$3	327 508,912,	\$3,935,403	
		Table V —	Agriculture				(
	(.	All figures i	n thousands)			t
	1937	1939	1940	1942	1944	1945	1
Income from crops and livestock	\$51 9,8 00	\$484,829	\$540,498	\$703,000			1
Acreage, principal	19,989	18,516	18,533	19,236			l
Leading crops (bu) Corn Hay		413,296 4,292	332,244 4,515		403,695 2,592		t
Oats Soybeans	166,302	92,520 46,820	152,496 35,140	141,320 73,794	71,400	158,102 74,000	C
Wheat	45,668	41,472	40,155	12,623	24,632	25,000	O
	To	ible VI.—N	anufacturin	g			9
	(Money	figures in th	ousands of	dollars)			c
	•		1935	1937		1939	С
			525,945	668,84		596,476 750,239	t
Wages paid			581,388	\$862,79		794 861	

Value of products		\$3,743,099	\$5,304,	283	\$4,/94,801
Leading products (value): Meat packing Steel works and rolling n Petroleum refining Agricultural machinery Bakery products Candy and confectionery	mills		\$584, 287, 115, 282, 126, 90,	208 546 224 437	\$479,501 207,302 122,934 204,600 119,681 91,384
	Table VII	Mineral Proc	luction		
(A	Il figures in t	housands of	dollars)		
•	1937	1938	1939	1940	1943
Total value of production	\$133,438	\$130,155	\$210,296		\$332,186

Total value of production	\$133,438	\$130,155	\$210,296	\$
Leading mineral products. Petroleum	9.970	30.100	101,200	
Coal	89,271	71,837	76,178	
Iron	70,893	30,899 11,707	57,719 11,964	\$73,882
Coke	20,213 6,7 <i>5</i> 7	5,994	7,057	7,209
Sand and gravel	7,487	5,649	4,686	5,578

convened in special session on April 30, 1940, its chief accomplishment being to increase old-age pensions to a maximum of \$40 a month. (T. C. PE.; X.)

War and preparation for it overshadowed political life in Illinois in 1941. The year closed with the general assembly in special session to consider new legislation to enable the state to co-operate better with the national government; appropriations of \$16,000,000 were asked for this purpose by Gov. Dwight H. Green. In the previous session of the legislature, 88 of the 650 bills passed were vetoed by the governor. The legislature refused to carry out the constitutional mandate to reapportion the legislative and congressional representation of the state, with the result that representation was still based on the census of 1900. Thus the population of Chicago was underrepresented both at Springfield and Washington. The state sales tax was reduced from three to two cents per dollar and additional taxes were laid on cigarettes, liquor and oil. Women were made eligible for grand jury duty.

Mobilization and production for war dominated the Illinois scene in 1942. The Great Lakes Naval Training station was supplying numerous navy personnel, Camp Grant was one of the largest army receiving centres and Ft. Sheridan an important army headquarters. Chanute field and Scott field were centres of intense and expanding aviation activity. Ordnance facilities at Savanna, Kankakee, Elwood and Marion were all in production, while the historic arsenal at Rock Island was vastly expanded. By Dec. 1, 1942, a total of \$617,475,000 in war bonds had been absorbed by private buyers, and the state's financial institutions had taken billions. Gains were made by the Republican party in the 1942 elections. U.S. Senator C. Wayland Brooks, at the head of the Republican ticket, defeated Raymond S. McKeough, Democrat, for the junior U.S. senatorship. Republicans gained 3 U.S. representatives, electing 19 to 7 Democrats. The entire Republican slate for state offices were elected.

In 1943, more than 800 Illinois plants were engaged in the manufacture

of aircraft and parts. The four great ordnance plants and the tank and artillery plants were near full production; production of landing barges and similar watercraft was increased throughout the year. The state stood sixth in the union in war expenditures. Up to Oct. 1, 1943, supply contracts and capital investments in plant and facilities totalled \$9,015,490,000, excluding subcontracts and prime contracts of less than \$50,000. Of this amount \$1,482,069,-000 was for aircraft; \$197,840,000 for ships and boats; \$2,928,678,000 for ordnance; \$3,140,589 for all other supply contracts. The total amount of facility contracts, principally industrial installations, was \$1,266,314,000. Absorption of 750,000 residents in the armed forces offset an influx to war industries so that on Nov. 1, 1943, the census bureau estimated a population loss of 318,284 after 1940.

1944

\$264,419 \$225,969

1943

813 \$7,826,735

\$280.872

329 \$2,864,376

\$256,399

War contracts for the state reached \$10,205,174,000 in 1944 exclusive of food contracts, all supply contracts under \$50,000 and facility construction under \$25,000. The four large ordnance plants were stepped up after the German offensive in late 1944, after having been previously cut back to less than capacity. In the 1944 election, Pres. Roosevelt received 2,079,479 votes to 1,939,314 for Dewey. Gov. Dwight H. Green was re-elected, receiving 2,013,270 votes to 1,940,931 cast for Thomas J. Courtney, Democratic candidate. The only Democratic state officer elected was Edward J. Barrett, secretary of state, but Democratic U.S. Senator Scott W. Lucas was re-elected and Emily Talt Douglas, Dem., defeated incumbent Stephen A. Day, Rep., congressman at large.

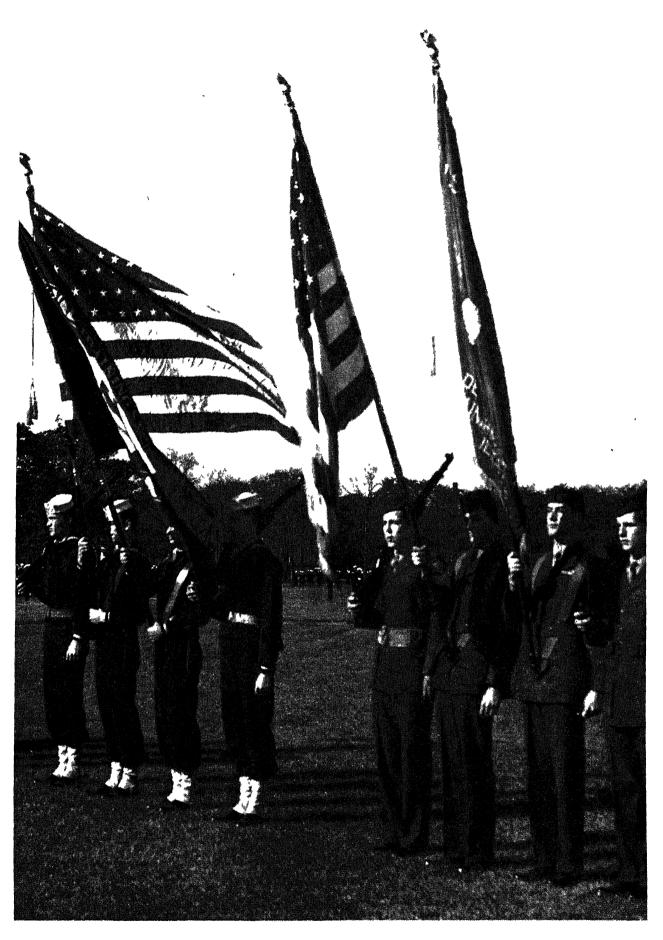
Incumbent state officers Hugh W. Cross, lieutenant governor; Arthur C. Lueder, auditor and George F. Barrett were re-elected. Conrad F. Becker (Rep.) was elected treasurer.

The return of Illinois veterans and the reconversion of industries from war work were the features of Illinois history in 1945. At the close of the year approximately one-third of the state's 890,000 men and 70,000 women in the armed services had been discharged. Re-employment was more rapid than had been expected. In the first 11 months of the year, 400,000 persons were placed in jobs by the U.S. employment service, including 46,646 veterans of whom 4,141 were severely handicapped.

The entire state Republican ticket was elected in Nov. 1946; in Chicago and Cook county, normally Democratic majorities were wiped out in many of the contests.

William G. Stratton, Republican candidate for congressman-at-large, defeated Mrs. Emily Taft Douglas, Democratic incumbent, by a plurality of 367,469. Richard Yates Rowe, Republican candidate for state treasurer, polled a plurality of 474,184 over Sam Keyes, Democrat. Vernon L. Nickell, Republican state superintendent of education, had a plurality of 520,003.

A proposal to pay a bonus to all Illinois veterans of \$10 for every month in service at home and \$15 for every month served overseas was adopted by a vote of 2,173,425 to 980,345.



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Illiteracy

Although World War II interrupted many proposed literacy studies and interfered with the world's efforts to reduce illiteracy, available material at the end of the decade 1937-46 showed a distinct increase in world literacy.

A simple statement of ability to read and write is a measure of technical but not of functional literacy. By the end of the decade, no satisfactory test of functional literacy had been developed. In Article 2 of Guatemala's National Literacy law of March 8, 1945, literacy was defined as "not only the knowledge of reading and writing, but also the possession of a minimum of abilities that may help the individual to incorporate himself with the cultural environment of the country." This very workable and far-reaching definition served as the basis for Guatemala's literacy campaign. Other Latin American countries, notably Venezuela and Mexico, also developed vigorous literacy campaigns and greatly increased the literacy of their population, especially during the latter half of the decade.

In the United States, the refusal of the army in 1940 to draft men having less than the equivalent of a fourth grade education focused attention on the problem of illiteracy. Later the army established camp schools to bring its recruits up to the fourth grade level of reading ability. Two other movements were designed to cope with illiteracy; the elementary education movement concerned primarily but not exclusively with foreign-born adults, and the movement to develop functional literacy by simplifying reading materials so that adults with a limited knowledge might still be functionally literate. Both of these measures were obviously stop-gaps.

The 1930 census showed that the illiteracy rate in the United States was 4.3%, but it was estimated in 1941 that the literacy rate had risen to 97%.

Denmark, Sweden and the Netherlands claimed practically no illiteracy while Italy showed 21% of its population over 6 years of age unable to read, Spain, 43% over 10 years of age unable to read or write, and France, 7% over 5 years of age unable to read. England and Wales showed .32% illiteracy using the signing of the marriage contract as the literacy standard.

Literacy in Russia (excluding western Ukraine and western White Russia) increased from 51.1% in 1926 to 81.2% in 1939.

India and China remained among the nations with the largest illiteracy problems and were making strong efforts to solve them. Literacy remained extremely low in India. About 120 out of 1,000 persons were literate in the sense of being able to read and write a letter. The Indian child's school days were cut short as soon as he could help in the field or at home.

Statistics of the ministry of education in China showed that after 1938, 46,348,469 illiterates had been educated. China's fight against illiteracy was bolstered with a new public school law which provided that all children between the ages of 6 and 12 should receive free basic education in public schools.

The United Nations Educational Scientific and Cultural organization announced that it would make a strong effort

to alleviate illiteracy through its education section, under the directorship of Dr. Kuo-Yo Shu of China in 1946. Señorita Elena Torres on Dr. Kuo's staff brought her wide experience acquired in working on the Mexican literacy campaign. U.N.E.S.C.O. chose to apply the term "Fundamental Education" to this phase of its program.

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Illumination

See ELECTRICAL INDUSTRIES.

I.L.O.

See International Labour Organization.

Immigration and Emigration, U.S.

Prior to World War II, U.S. consuls stationed abroad approved visa applications of aliens seeking entry into the United States. This procedure was set aside during the war period. During the period July 1, 1941, to June 1, 1945, a special procedure was evolved for issuing visas. The consul was required to submit the request to the secretary of state, who in turn transmitted it for advice to a committee of representatives of the state, war and navy departments, the Federal Bureau of Investigation and the immigration and naturalization service. Effective Dec. 1, 1941, additional restrictions were placed upon the entry and exit of aliens generally. Except for emergency cases, permits both to enter and to depart were required. Aliens whose movement was considered prejudicial to the interests of the United States were not allowed to enter or depart. These controls gradually were relaxed after the end of hostilities with respect to most aliens.

During the fiscal year 1943, the number of immigrants—aliens admitted to the United States for permanent residence—fell below 25,000. The number of immigrant aliens admitted during the 1930s had risen from 23,068 in the fiscal year 1933 to almost 83,000 in 1939. Following the outbreak of World War II in the autumn of 1939, immigration declined steadily until 1943, after which an upward trend was evidenced.

The war and the consequent disruption in transportation facilities caused a considerable decline in quota immigration. Quota immigrants to the United States totalled 62,402 in 1939. This was 40.6% of the number admissible under the quota laws. For 1945, there were only 11,623 quota immigrants out of the total annual quota of 153,879 permitted entry under the Immigration act of 1924.

Nonquota immigration showed a fairly constant number from the western hemisphere countries not subject to quota restrictions. Although this type of immigration supplied the smaller share of the total immigration from 1938 through 1941, yearly totals of nonquota immigrants after 1942 equalled or exceeded in number those admitted under the quota system. Of the 26,496 nonquota immigrants for 1945, 22,770 were admitted as natives of the following (nonquota) countries:

Vanada8,4	20
Newfoundland	oo
Mexico 5	11
Central America	-0
Trest indies	4 4
South America	44
Other countries	12
Other countries	11

The remainder of the nonquota total were members of particular groups exempt from quota restrictions, such as alien wives and unmarried children of United States citizens, husbands of United States citizens, and persons in a group including professors, ministers and students.

Nonimmigrants included principally the following: government officials, their families and employees; temporary visitors for business or pleasure; persons in continuous transit through the United States; seamen; and those individuals allowed to carry on trade under treaty agreements. Students, although nonquota immigrants, were admitted under conditions similar to those applicable to nonimmigrants. For statistical purposes, emigrants were considered as aliens who had lived in the United States for at least one year and were departing at least that long; nonemigrants were aliens who had entered the country temporarily or who were permanent residents departing for a stay of less than one year. Immigrants, during the period 1938-45, exceeded emigrants by 276,583.

Table 1.—Admissions and Departures of Aliens Years ended June 30, 1938, 1939, and 1941–1945 (figures to nearest thousand)

1942 111 29 15 14 82 75 7 142 29 9 19 114 84 105 24 9 15 81 59 54 Aliens admitted 152 52 36 16 100 88 17 71 Immigrant . . Quota Nonquota Nonimmigrant 185 201 Aliens departed

The admissions and departures of aliens for the years 1938-45 (with the exception of 1940) are shown in Table I. A further breakdown of immigrant aliens admitted and departed for specified years appears in Table II.

Table II.—Immigrant Aliens Admitted by Countries of Last Residence, and Emigrant Aliens Departed by Countries of Intended Future Residence, 1937, 1939, 1941 through 1945. (figures to nearest hundred.)

				Immig						Emi	grant			
Countries	1937	1000	1941	1942	1943	1944	1945	1937	1030	1941 1	042 1	0/3	1044	1045
		1939										51		
All countries	502	830	518	238	237	286	381	267	267	171	74		<i>57</i>	74
Europe	319	631	265	112	49	45	59	143	138	33	11	17	27	40
Albania	2	2												
Belgium		7	18	3	1	1	1	1	1					
Bulgaria		1	1											
Czechoslovakia		29	3	1	1	1	1	3	1					
Denmark	2	3	2	1	1	1		3	2		1			
Eire	. 4	11	2	1	1	1	1	8	7	1				
Estonia		1												
Finland	. 2	4	2					3	2					_
France	. 10	19	48	44	12	4	2	6	5	. 1				2
Germany	. 114	. 335	40	22	2	2	2	24	42	18				
Great Britain and														
Northern Ireland														
England	. 14	27	74	8	9	12	28	23	16	• 4	6	14	22	27
Scotland		3	3	1	1	1	2	11	7	1	1		1	3
Wales			1				1	1	_					
Northern Ireland	. 1	1	1				3	2	2	_				
Greece	. 9	9	3	2	2	2	2	4	5	1				
Hungary	. 7	13	3	2	1	1	1	. 1	1	_				
Italy		66	5	1		1	2	17	18	1				
Latvia	. 1	2	1					_						
Lithuania	. 2	3	2	3				1	_					
Netherlands	. 6	13	8	1	1	1	1	2	2				•	
Norway	. 4	5	4	1	1	1	1	6	5					
Poland	. 12	31	5	3	4	3	2	4	3				,	
Portugal	. 3	4	11	4	4	4	6	2	3	2	1	1	1	2
Rumania	. 3	4	1	1		1	1	2	1					
Soviet Russia	. 1	1	_	1	_	_	_	2	. 1	1 2	1			i
Spain	. 3	3	3	2	3	3	2	3	1	2	·			i
Sweden		3	5	2	1	1		7	6					
Switzerland		12	14	6	1			2	2					
Yugoslavia	. 6	11	1	1		1	1	3	3 1					1
Other Europe	. 4	8	3	2		1	1	1					_	
Asia	. 11	22	18	6	3	2	4	28	16	28	8		1	3
China	. 3	6	10	2	1	1	1	18	5	8	1			2
Japan	. 1	1	3					8	8	18	6			
Palestine	. 4	11	3	2	1		1	1	1					
Syria	. 1	2						_	_	_	_			
Other Asia		1	2	2	1	1	2	2	2		1			1
Canada	. 118	105	113	105	96	98	111	10	10	8		6 4	. 5	6
		3	2	1	2	3	5	1	1					
Newfoundland	. 2	-					-	-				25	17	12
Mexico	. 23	26	28	24	42	66	67	37	51		29	23		
West Indies	. 13	22	47	16	23	32	55	14	15	14	8		1	1
	• • •	5	12	8	12	20	34	4	4	6	3	1	2	2
Central America		-		_				7	9		7			
South America	. 7	9	22	10	7	12	16		•			•		-
Africa	. 2	2	6	5	1	1	4	1	1	1	1		1	
	• -	2	2	1	1	6	16	2	7	2			1	2
Australia—New Zealand						•	10	20	21	20	1			3
Other countries	. 1	1	2	1	1		10	20	21	20	,			•

Deportation.-Persons subject to deportation fell generally into two groups: those who entered the United States unlawfully and those who, though lawfully admitted, lost the privilege of remaining in the country because of subsequent conduct. The attorney general, with the acquiescence of congress, could suspend deportation of certain aliens who had close family ties in the United States; thereafter, those aliens might remain as permanent

An act passed in 1929 had prohibited the return of deported aliens without special permission.

Prior to 1925, the number of deportations from the United States had been comparatively small. Aliens in need of public assistance from causes arising after their entry and who requested removal might be removed from the United States at government expense. During the years 1937-45, 4,289 aliens were returned to their native lands under this provision. During this period, 64,032 aliens were deported under warrants of deportation, and 163,392 deportable aliens were allowed to depart at their own expense without warrants of deportation. This total of departures was 227,424.

For the fiscal year 1945, more than 8,000 of the total of 11,270 deported were Mexican nationals. There were 69,490 aliens who were permitted to depart voluntarily in lieu of deportation, 51,000 of whom left the United States via the Mexican border. In 1945 the principal causes for deportation were: entering the United States without proper inspection or by false statements; having been previously deported or debarred from the United States:

remaining in the country longer than authorized; committing a crime, entering without proper documents; entering in violation of the alien contract labour law; having mental or physical defects; violating the narcotic laws; and belonging to immoral classes.

Border Patrol.-With the restriction of immigration in the 1920s, there had been a marked increase in the number of aliens attempting to gain entry into the United States surreptitiously, and at the same time, an increase in smuggling. The immigration border patrol was formed to meet this situation. From the time of its inception in 1924 to 1944, the border patrol captured 4,187 smugglers of aliens and seized more than \$6,000,000 worth of contraband merchandise. During 1945, in the course of patrolling more than 8,000,-000 mi. along the borders of the United States, this organization apprehended nearly 70,000 deportable aliens.

Importation of Western Hemisphere Labourers.—The continued manpower shortage led to the extension of regulations and agreements reached with nearby countries regarding the importation of alien labourers. After 1942, when the first agreements were made, there were 354,896 labourers temporarily admitted to the United States, chiefly from Mexico and the West Indies. Most of these persons were repatriated. On June 30, 1945, there remained temporarily in the United States 99,434 agricultural labourers, 64,990 railroad track workers and 17,333 others employed in industries and services essential to the war effort. (See also Aliens; Census Data, U.S.). (U. C.)

Immunization, Therapeutic

See MEDICINE.

Imports

See International Trade; Tariffs. See also under various countries.

Imrédy, Bela

Imrédy (1891-1946), Hungarian politician, was a banking official and a well-known financier before he became premier of Hungary in May 1938. At that time the Hungarian government had joined the axis powers and had passed its first anti-Semitic legislation. Although Imrédy had been looked upon as a liberalizing influence, he continued and even implemented this anti-Jewish policy. His program, the chief plans of which were a capital levy and land reform, was never carried out. Shortly after taking office he visited Germany, was impressed with nazi totalitarianism and on his return to Budapest introduced more and even harsher anti-Semitic laws. Ironically, it was Imrédy's anti-Semitism that led to his downfall, for during a debate in parliament, it was brought out that Imrédy himself was partly of Jewish descent. He was forced to resign in Feb. 1939. The discovery that he had Jewish forbears did not change Imrédy's views on anti-Semitism, however, nor did it lessen his popularity with Adolf Hitler. With the fuehrer's blessing, Imrédy formed a new fascist party, called the National Party of Rejuvenation, which became a powerful and frequently decisive influence in government affairs. In the government headed by Gen. Doeme Sztojay in 1944, Imrédy was named minister without portfolio of economic affairs, but was ousted in August of that year as the Russian armies drew closer to Hungary. He fled the country after the Russian invasion and on June 16, 1945, it was disclosed that he had been seized by U.S. troops near Innsbruck. He was later turned over to the new Hungarian government, tried and convicted in Nov. 1945 on charges of committing war crimes and anti-Jewish acts, and executed Feb. 28, 1946.

Incendiary Warfare

Use of fire as a weapon of war extends back beyond the era of recorded history. The early importance of fire weapons was gradually eclipsed after the invention of gunpowder until, with the introduction of nitrocellulose propellents and explosives, incendiaries were relegated to a position of relative unimportance.

Developments of military technique between 1937 and 1945, however, reversed this trend. Newly developed fire agents and weapons proved to be of such utility that incendiary warfare came to be an outstanding feature of hostilities during the closing phases of World War II.

Incendiary Bombing.-As early as 1918 Germany had

developed and produced a new type of incendiary bomb of which much was expected. Its use in World War I was withheld because the defeat of the Central Powers was obvious by the time it had reached production stage. The existence of this new weapon was not entirely unknown outside Germany; yet no other nation was seriously advancing the offensive employment of incendiary bombs between 1936 and 1939. During these years, however, the British government initiated an extensive program to supplement the fire fighting resources of English cities.

The German electron bomb was the first "secret weapon" of World War II. Its use was expected to lead to the catastrophic destruction of raided cities and to demoralize their populations to the point of surrender. This bomb consisted of a magnesium alloy case containing an ignition charge of thermit (aluminum and iron oxide), designed to burn for several minutes at a temperature of approximately 3500° F. Since the bomb weighed only about two pounds, it was intended to be showered in quantity over burnable targets. In aerial attacks against London and other English cities in 1940 and 1941, chief reliance was placed on the electron bomb. It did produce widespread damage; yet its effectiveness could not be rated as decisive.

Reasons why the electron or magnesium bomb fell short of expectations were: (1) Fire defense proved stronger and more effective than had been anticipated; (2) the luftwaffe was never able to deliver saturating attacks such as became commonplace later in the war; (3) the bomb itself possessed certain technical deficiencies as compared with subsequently developed incendiary munitions.

The serious threat presented by the incendiary bombing of English cities in the early days of the war, however, led to the hurried development by Allied technicians of aerial fire weapons for the bombing of continental targets. Preference was given at first to thermit and magnesium agents because of ease of manufacture and availability of materials.

Oil incendiaries were used in military operations as early as the 8th century B.C. The Germans used some oil bombs against British targets in 1940 and 1941 but without marked success. Light oil derivatives tend to burn too rapidly for general incendiary purposes while heavier products are difficult to ignite. Hydrocarbon oils, however, are extremely efficient generators of heat, which fact induced study of methods to modify their physical characteristics in order to produce a fire-generating agent more effective than the metal incendiaries, thermit and mag nesium.

This development proceeded in two directions. Gasoline was thickened to a gelatinous state by addition of "napalm" to lengthen burning time and to ensure adhesion to walls and ceilings once the bomb had burst. Addition to jellied gasoline of magnesium powder and liquid asphalt produced a "pyrogel" mix which proved to be highly efficient in holding intense heat against firevulnerable surfaces for extended periods. In these developments Allied techniques surpassed those of the axis powers, the latter achieving little improvement in the incendiary munitions that were at hand at the outset of the war.

These newer oil incendiaries, however, were not available to the U.S. army air force at the time the first aerial attack of the Japanese mainland was undertaken in April 1942. The bomb used on the occasion of Gen. James Doolittle's raid on Tokyo contained thermit which, although reacting at high temperature (4,330° F.), had a brief burning period of only about one minute. Conse-

quently the results obtained against Tokyo, although impressive at the time, were scarcely comparable with the effects produced in the later bombing of Japanese targets.

In the first and only appearance of Japanese aircraft over the U.S. mainland, incendiary bombing was the objective. On Sept. 9, 1942, a lone naval seaplane sortied over the Siskiyou National forest in southern Oregon and dropped a fire bomb with the expectation of starting a forest conflagration. This attempt was unsuccessful, because unseasonable rains had lowered combustibility in this area.

German incendiary bombing attacks reached their maximum intensity during the final phases of the battle of Britain. Beginning Sept. 8, 1940, London was attacked for 22 successive nights with fire bombs. During this period an average of more than 700 serious fires were combated each night by the British fire brigade and auxiliary units. The climactic raid of Dec. 29 represented the extreme effort of the German air force to destroy the British capital by fire. Thereafter, German incendiary attacks became more sporadic and the initiative in this field passed to the British.

Tactics of the R.A.F. bomber command, once attack of continental targets was regularly undertaken, involved night flying and the general bombing of areas rather than the precisely aimed bombing of specific points. For this purpose the incendiary type of bomb proved to be more destructive than explosive munitions, although the latter were liberally used for the purpose of restraining fire fighters. Scientific analysis of bombing effectiveness determined that in some instances where fire hazard was substantial, as high as 90% of destruction was attributable to fire bombing. This led to a partiality toward fire weapons on the part of British airmen which was not shared by the U.S. air force when U.S. bombers appeared over Europe.

Incendiary barrage of flame-throwing tanks at "Skyline Ridge," southern Okinawa. Japanese troops offered stiff resistance in this area and had to be burned out of caves during the campaign of April—June 1945

Tactics of the U.S. favoured daylight precision bombing of selected points, for the destruction of which explosive bombs were preferred. It was not until Oct. 1943 that the bomber command of the 8th (U.S.) air force began flying frequent incendiary missions and commenced accumulating data as to the relative effectiveness of incendiary and explosive munitions in precision bombing.

Tactical experience gained by Allied forces in bombing operations against European targets in 1944 and 1945 may be summarized as follows: (1) for area bombing, where exact aiming was not required, the incendiary was the more effective weapon; (2) for precision bombing, use of incendiaries should be limited to targets or sections of targets known to be inflammable, others being attacked with explosive bombs.

On the whole, types of targets encountered in Germany and other European cities could not be rated as especially vulnerable to fire. Nevertheless postwar bombing surveys completed in 1946 indicated that an amazing proportion of damage to both cities and industrial plants was traceable to incendiary attack. Ton for ton, incendiaries proved to be four to five times as destructive as explosives, according to findings of the Strategic Bombing survey (U.S.A.). Actually, fire damage was assessed as equalling destruction of 162,000,000 sq. ft. of targets on continental Europe.

From these studies the following empirical rules could be formulated: (1) when roof coverage of an area equalled 30% or more, prospects were good for sustaining spreading fire; where structures were less compactly grouped, pattern bombing of the area was not justified; (2) for isolated targets, where precision bombing methods were followed, incendiary attack was preferable when directed against any single building where 25% of its structure or contents were inflammable.

The Air Attack on Japan.-It was with considerable



background of experience and data that the bombing of industrial Japan was begun in 1944 by U.S. army aircraft based in Saipan and Guam.

As compared with European structures, the typical Japanese building was recognized as being more readily burnable, the general fire hazard being greatly aggravated by the density of population characteristic of Japanese urban communities. The situation was such as to invite area bombing of industrial districts with the tactical objective of initiating general conflagrations, something that could scarcely have been accomplished in the European theatre.

In the course of attacks made by U.S. bombers from Nov. 1944 until the surrender of Japan, 66 cities with a combined population of 20,000,000 were seriously crippled. In five major metropolitan centres, more than 100 sq.mi. were gutted by fire. Destruction was so complete that the U.S. army air force chief could remark, "Never in the history of aerial warfare has such destruction been achieved at such moderate cost." Postwar analysis indicated that dislocations of the Japanese war effort due to incendiary bombing were so critical that capitulation would have been forced by autumn of 1945 even though atomic bombing had not been undertaken in August of that year.

The incendiary bomb most frequently employed against Japan was a small sized unit loaded with jellied gasoline or the more viscous pyrogel mixture which included magnesium paste and asphalt. These were clustered into bundles having the general ballistic characteristics of a standard 500-lb. bomb, the cluster being designed to open at a predetermined level—usually 1,000 or 2,000 ft. above the target. Larger fire bombs weighing 100 to 500 lb. were also dropped singly against more fire resistant targets.

The incendiary bombing operation was initiated in many instances by demolition of water supplies or other high-explosive missions where these could be undertaken without impairing the combustibility of the target. Incendiaries were then laid down, in types and quantities calculated to induce sustaining fires. Finally, fire prevention efforts of the defense were counteracted by use of fragmentation and delayed-action bombs. Aircraft were usually kept over the target area long enough to prevent the all-clear signal from being sounded until fires were well under way.

Fire Defense.—The tremendous potentiality of the aerial bomber as a distributor of fire-starting munitions gave rise to new and unprecedented problems in fire fighting. Once defense against incendiary warfare had become thoroughly organized, however, it threatened to limit materially the effectiveness of fire bombing, so that the attacker was soon forced to adopt countermeasures against fire fighting.

During the course of World War II, civilian fire defense organizations in Great Britain, Germany, and Japan were successively called on to withstand large-scale incendiary bombing. In order of accomplishment the British fire service could be rated first, the German second and the Japanese third. This statement, however, required some qualification.

Japan was more vulnerable to fire than either Britain or Germany; moreover, the attacks against it were much the most ponderous. The early fire raids against London and other English cities, although seeming at the time to be heavy, were actually moderate compared with the overwhelming assaults eventually delivered against Germany and later against Japan.

British fire defense was built on the realistic premise that incendiary attacks were coming and had to be prepared for. Some 1,400 local professional fire brigades provided nuclei around which the emergency wartime fire organization was developed. When the battle of Britain commenced, this auxiliary service had enrolled 50,000 members trained in operating pumper units. In addition, countless fire wardens were provided to handle small incendiary incidents with portable apparatus.

It was the heroic efforts of this organization that denied Germany the full fruits of its incendiary offensive against British territory. Yet the fact remained that while these attacks were in progress the royal air force was still actively challenging the luftwaffe over England and was able to ward off a considerable part of Germany's bombing potentiality.

German fire defense was never supplemented by an emergency organization comparable with that developed in England, probably because the likelihood of large-scale bombing of the German homeland had never been seriously considered before the war. However, failure of German fire fighters to prevent the fire destruction of so many German cities may be attributed more directly to conditions under which the service was forced to operate than to defects in organization.

With the beginning of 1,000-plane missions over Germany it became customary to withdraw fire fighting units to the perimeter of the city until the attack had ended, for one reason because equipment was too scarce to risk its destruction. While these heavy raids were in progress, civilians took to shelters and sought merely to keep alive until the sounding of the all-clear. By this time fires had accumulated such momentum that efforts to extinguish them were, in most cases, futile.

The Japanese, in contrast to the Germans, had made elaborate preparations for the fire defense of their cities well in advance of World War II. Here failure of passive defense to avert calamitous fire destruction was not due to inefficiency or to lack of courage on the part of the defenders—it followed because the problem was too great to be solved by fire fighting alone.

While fire defense was counteracted in the case of German cities by liberal use of explosive munitions to force personnel away from the attack zone, such measures were sparingly used against Japanese targets, on the theory that here bomber capacities could be more efficiently utilized by 100% incendiary loads. Japanese fire defense was overwhelmed by the simple expedient of starting more fires than the ground defense could possibly cope with.

Experience of the war years indicated that a well developed fire defense was an essential adjunct to protection against aerial attack but that this type of defense could not be expected to succeed without substantial support from a friendly air force.

Tactical Employment of Fire.—Incendiary bombing operations were essentially strategic in nature and, although inevitably causing death, were aimed primarily at the destruction of matériel. As a tactical antipersonnel weapon in direct support of ground force operations, fire also attained considerable usage—particularly in the later stages of World War II.

The flame thrower was the most important tactical incendiary weapon. It differed from the incendiary bomb in that, being intended for use against personnel, it was expected to produce only short bursts of intense, flaming heat. As used in World War I, the flame thrower was spectacular but was not particularly effective. Better combinations of fuel (heavy and volatile oils), introduction



Flame thrower igniting a Japanese structure on Namur Island, which fell to U.S. forces on Feb. 3, 1944. The flame thrower projected a burst of diesel oil or jellied fuel about 35 yards; the flames not only burned but suffocated the occupants of the objectives. Flame was ejected by nitrogen or compressed air

of thickened gasoline and some improvements in the basic design of the portable weapon, all aided in the development of a much better apparatus.

The portable unit was carried by one soldier and was fired under protection of riflemen to pin down the enemy while the flame thrower was being brought into action. The late U.S. model weighed 70 lb. and, under favourable wind conditions, projected flame to a range of 125 ft. At the end of the war much lighter units were introduced, intended to be discarded after firing one burst of flame.

The tank-mounted flame thrower was an innovation of World War II and represented an important development in military technique. It enabled easier penetration of fields of hostile small arms fire so that flame could be brought directly to embrasures of pill boxes and other types of fortifications; by filling these with flame and smoke, the defenders were flushed out or destroyed.

Flame throwers were sparingly used in European operations because tactical situations rarely offered best opportunities for their employment. The reverse was found to be the case in attacking Japanese-held fortifications in the Pacific. Consequently, flame throwers appeared conspicuously in every island operation from the Marianas to Okinawa.

An aerial weapon resembling the flame thrower in action was the jettisonable fuel tank filled with thickened gasoline. This weapon was widely used in 1944 and 1945 by low-flying Allied fighter planes in Europe as well as in the Pacific. It produced a large burst of flame extending over a wide area and was found to be most effective against entrenched troops.

Incendiary rifle and hand grenades of various types were standard equipment of the leading belligerents during World War II. These were filled with white phosphorus, thermit, sometimes gasoline. Such portable weapons proved convenient for destroying materials and munitions and for attacking vehicles and even personnel at close range. (See also Air Raid Defense; Aviation, Military; Chemical Warfare; Munitions of War; Strategic Bombing; Strategy of World War II; Tactics of World War II; World War II.) (G. J. B. F.)

Income, Distribution of

See WEALTH AND INCOME, DISTRIBUTION OF.

Income and Product

The ten-year period 1936–46 witnessed enormous changes in the United States national income and national product. Although a substantial expansion had been achieved from the low levels of the great depression by the beginning of this decade, the U.S. economy was still operating at much less than its potential capacity, with the national income slightly less than \$65,000,000,000. Further recovery occurred in the years before the outbreak of World War II, but it was only in the following period of economic mobilization for total war that the full

productive capacity of the economy was utilized. During these years, the national income expanded to record high levels, reaching \$161,000,000,000 in 1945. The high rate of economic activity was exceptionally well maintained in the first year following the end of World War II. In fact, the postwar inflation in 1946 contributed to raising the national income to a new high figure of \$163,800,000,000.

The decade, embracing recovery and war, also produced significant results in the quantity and quality of national income research accomplished. The National Bureau of Economic Research published its definitive work on national income, National Income and Its Composition, under the authorship of Prof. Simon Kuznets. Kuznets also developed a practical method for estimating the national income from the commodity flow aspect and published his results in a significant volume entitled Commodity Flow and Capital Formation.

During the years of World War II, the official statistics of national income were greatly elaborated in the United States and Great Britain, as well as in several other countries. The trend of this research was in the direction of making the national income statistics sufficiently detailed to serve as a system of national income accounting, covering both income and expenditures for the major segments of the economic system. The results of British government research were made available in a brilliant series of national income White Papers, and the department of commerce research was published in articles in the Survey of Current Business throughout World War II.

As the problems of the postwar period became evident and international organizations were established to deal with those problems, it became apparent that national income research would be greatly stimulated throughout the world. Several of the international organizations included in their charters the requirement that the members furnish national income statistics as a necessary aid in the solution of economic problems. It was evident, too, that administrative use would be made of national income statistics in such problems as the contributions to be made by the various nations to international organizations.

Meaning of Terms.—"National income" represents a summation of the net earnings of the various factors of production derived from their association in current economic production. Both money income and income in kind are included, as long as they are derived from participation in current production. Such income receipts as relief, unemployment benefits, pensions, gifts, capital gains or losses and gains from illegal activities are excluded since they do not represent earnings derived from current productive activity. The incomes included in the compilation are net incomes; that is, in the case of business enterprises, the incomes are counted after deduction of costs of doing business and after allowance for depreciation and business taxes. In the case of corporations, the income is taken after allowance for income and excess profits taxes. The estimates are limited to those incomes ordinarily derived from the market economy. Thus, the value of the services of housewives is not included, whereas the income derived from government employment or government obligations is included. It is well to emphasize that the national income is not simply the sum of money incomes of all persons in the U.S., such as might be reported for income tax purposes.

"Gross national product," as measured by the U.S. department of commerce, represents a summation of three

major components: (1) the market value of goods and services flowing to consumers; (2) the value of the gross output of capital goods retained by private business; (3) the cost value of the goods and services produced or purchased by government. The gross national product differs from the national income in that no allowance is made for depreciation and other reserves (which constitute business expenses in the computation of income) or for taxes paid by business.

Taken together, the national income and national product estimates provide a comprehensive picture of the economic activity of the U.S. as a whole. The two sets of estimates represent the receipts (national income) and expenditures (gross national product) sides of a consolidated national account showing the major transactions that occurred during the year relative to current production of goods and services. The data are useful in giving quantitative expression to economic trends and problems of the national economy as well as in comparing the operations of an individual business firm with the national totals for all economic activity. During World War II, the data proved of considerable value in dealing with problems of economic mobilization and fiscal policy. As attention turned to postwar economic problems, this body of statistics was utilized in studying postwar market potentials and in providing the framework for analyzing such problems as taxation and social security.

Changes After World War I.—The estimates of U.S. national income from 1919 through 1946 are shown in Table I. These estimates are in terms of current dollars and consequently are affected by the general level of prices as well as by the physical quantity of goods and services produced. Since for many purposes the physical quantity of national production, or real national income, is required, a national income series in dollars of constant purchasing power is also shown in Table I.

In assessing the importance of the rise in national income over a period of time, it is essential to take account of the increase in population. As population rises, there are more persons to share in the goods being produced for present and future consumption and also more hands available for contributing to total output. These changes in income produced per capita, after adjustment for fluctuating prices, are shown in Table I.

By 1936 substantial recovery of the national income

Table I.—U. S. National Income in Yearly and Average (1935-39) Dollars

															Table 1	1733~	by adliars
															Total	Total	Per
															(In billions	(in billions	Capita
Year															of dollars)	of dollars)	
1919																	(\$)
1920	•	•	٠	٠	٠	•	•	٠	٠	٠	٠	٠	٠	٠	\$67.6	\$ <i>47.</i> 8	\$455
	٠	٠	٠	٠	٠	٠	•	٠	٠	٠	٠	٠	٠	٠	69.7	44.1	414
1921	٠	٠	٠	٠	٠	٠	٠	٠	٠	٠		٠			52.6	40.8	377
1922	٠	•	٠	٠			٠	٠				٠			60.4	49.5	451
1923	٠	٠	٠	٠	٠										70.0	56.7	
1924														Ċ	70.0	56.4	508
1925					-			- 1	-	-	-	•	•	•	74.6		499
1926	_	_	Ċ		Ť	•	-	٠	•	•	•	•	٠	•		59.5	518
1927	-	•	•	•	•	•	•	•	•	٠	٠	•	٠	٠	76.8	60.7	521
1928	٠	•	٠	•	٠	٠	•	٠	•	٠	•	٠	٠	٠	76.2	61.9	524
1929	٠	•	٠	٠	٠	٠	٠	٠	•	٠	٠	٠	•	٠	80.1	64.8	541
	٠	٠	٠	٠	٠	٠	٠	٠	٠	٠	٠	•	٠	٠	83.3	1.86	566
1930	٠	٠	٠	٠	٠	٠	٠	٠	٠	٠	٠				68,9	58.0	471
1931		٠	٠	٠	٠										54.5	51.0	411
1932	٠														40.0	41.6	
1933											-	-		Ī	42.3		334
1934					Ċ	Ċ	- 1	Ī	•	•	٠	•	•	•	49.5	45.7	364
1935		Ī	•	•	•	٠	•	•	•	•	•	•	•	•		50.6	400
1936	•	•	•	٠	•	٠	•	•	•	•	٠	•	•	٠	55.7	56.1	440
1937	•	•	٠	٠	٠	٠	٠	٠	٠	•	٠	٠	٠	٠	64.9	65.2	509
	•	٠	٠	٠	•	٠	٠	٠	٠	•	٠	•	٠		71.5	69.0	536
1938	•	٠	٠	٠	٠	٠	٠	٠	•	٠	٠	٠			64.2	64.2	494
1939	•	٠	٠	٠	٠				٠						70.8	71.9	549
1940			٠												77.6	78.0	
1941															96.9		591
1942						-		Ċ		Ī	Ť	-	•	•	122.2	92.8	696
1943					Ť	•	٠	•	•	•	•	•	•	•		107.2	796
1944	•	•	•	•	•	•	٠	•	•	٠	•	•	٠	٠	149.4	123.7	906
1945	•	•	•	٠	•	•	٠	•	٠	٠	٠	•	•	٠	160.7	128.0	927
1946*	٠	•	•	٠	٠	٠	٠	٠	٠	٠	٠	٠	٠	٠	161.0	125.5	899
	•	٠	٠	٠	٠	٠	٠	٠	٠	٠	•	•		٠	1 63.8	118.0	836

Source: U.S. Department of Commerce. *Preliminary.

from the bottom of the depression had been made. As compared with 1932, income had increased by more than 50%, from a level of \$40,000,000 in 1932 to \$64,900,000,000 in 1936. As may be seen in Table I, this recovery in current dollar national income was influenced to only a minor extent by rising prices. The expansion of the national income in 1935–39 dollars was almost equally as impressive, while the increase in per capita income amounted to almost 25%.

The position of the economy in 1936 was, however, far short of full prosperity. A substantial volume of unemployment remained, and the industrial plants of the nation were operating at much less than full capacity. The economic expansion continued in 1937 with the national income rising to \$71,500,000,000, though in that year a larger rise in prices limited the increase in real national income.

The rising trend of economic activity which was in progress after 1933 came to an end in the fall of 1937. Many maladjustments arising from the rise in prices, the sharp increase in wage rates, the accumulation of inventories, the rapid decline in the balance between government expenditures and receipts and other factors brought an end to the recovery movement at a point well below full employment of economic resources. In consequence, 1938 was a year of sharp, though fairly short, recession. The national income declined to \$64,200,000,000. The low point in the downturn was reached about the middle of 1938, when the government expenditure program designed to halt the slump began to take effect.

In 1939 the national income reached \$70,800,000,000, and the economic situation was fairly stable by the time World War II broke out in Europe in September.

During the first months of World War II, little occurred to indicate a material change in the general economic situation. However, after the German war machine demonstrated its power against France, the U.S. initiated a rearmament program that dramatically changed the trend of national income. Even though the rearmament effort did not get under way until the second half of 1939, its impact upon the economy was apparent in 1940, when the national income rose to \$77,600,000,000. With the national defense program being continuously revised upward as the U.S. committed itself to aid the countries fighting Hitlerism, the nation moved more and more rapidly toward capacity operation of its economic system. In 1941 the national income made a spectacular increase to \$96,900,000,000.

Not until after actual entrance of the United States into World War II at the end of 1941, however, was the tremendous production potential of the nation demonstrated. During the two years which followed, unemployment was virtually eliminated, and the labour force of the nation was substantially increased by the recruitment of large numbers of younger persons and female workers. In addition, industrial capacity was enlarged through the war production facilities program fostered by the government. As a consequence, the national income continued to expand by large amounts in 1942 and 1943, with a gain in the earlier year of more than \$25,000,000,000 and a gain in the later of more than \$27,000,000,000.

As may be seen by a comparison of the national income in 1946 dollars and in 1935-39 dollars, shown in Table I, the rise in the national income after 1940 was in part because of the rising trend of prices, but the larger part of the expansion represented an increase in real income. This rise did not have the same significance as an expansion of real income in times of peace from the standpoint

The period of rapid wartime expansion of the national income came to an end at about the close of 1943. By that time the national income was flowing at an annual rate of approximately \$155,000,000,000, and represented virtually complete utilization of economic resources. As inflation of the national income through rising prices was held in check during 1944 by the price control and rationing programs, the national income in that year rose only moderately to \$160,700,000,000. It may be seen, therefore, that the fairly substantial increase in the national income

of economic welfare because it had to be used in the

prosecution of World War II.

Even so, 1944 national income exceeded the 1943 total by only 8% in terms of current dollars, while in terms of constant dollars the increase was limited to 6%.

from 1943 to 1944 occurred largely during the earlier year.

The 1944 level of national income continued to prevail through the summer of 1945. Although the war production program of World War II was curtailed somewhat after the end of the European phase of the war, reemployment in civilian industries was sufficient to hold the income level substantially stable. With the end of the Japanese phase, however, the cutback of war production was so substantial and affected so large an area of industry that unemployment rose and the flow of income turned downward. The reconversion of industry to peacetime products proceeded fairly rapidly, but re-employment in civilian goods lines was not large enough to offset the release of workers from war production and the release of men from the armed forces.

The period of declining economic activity proved to be exceptionally short, considering the magnitude of the industrial shift required from wartime to peacetime production. It lasted for about nine months, reaching a low point in the first quarter of 1946. Despite the interruptions caused by labour-management disputes in the early months of the year, the reconversion of industry was accomplished rather quickly. An upswing in economic activity was begun in the second quarter of 1946 which continued until a strike in the coal industry led to some dampening of economic activity in December. The flow of income was also increased by a large rise in wage rates and a substantial rise in prices which occurred as wartime controls were eliminated after the middle of the year. A preliminary estimate of national income for 1946 showed an aggregate of \$164,000,000,000, or a new record high, although, after adjustment for rising prices, income was lower than in the 3 preceding years.

Distributive Shares of National Income.—The changes in the distributive shares of national income from 1936 until the entrance of the United States into World War II, shown in Table II on p. 631, were, in general, characteristic of the expansion of the business cycle. Just as profits and entrepreneurial types of income had declined most severely during the depression years, so did these components of the national income experience larger expansion in the period of economic recovery. This was the case not only with the earnings of corporations but with agricultural income and the income of other noncorporate business.

For the aggregate of corporations, 1932 was a year of severe losses. The \$7,200,000,000 profit level of 1929 had been converted into an aggregate loss of \$3,600,000,000 as a consequence of the economic depression. In the years of recovery which followed, corporate profits rose rapidly, though up to the outbreak of World War II in Europe

they did not approach the 1929 figure. In both 1937 and 1939, corporate earnings were near the \$4,000,000,000 mark. The large stimulus given to profits by high levels of economic activity was demonstrated in the rearmament period. As the economy approached capacity output in 1941, profits rose to \$8,500,000,000, double the 1939 figure, even though taxes on corporate income had been substantially increased.

While less spectacular than corporate earnings, the net income of noncorporate business rose very materially during the recovery period. By 1937 agricultural income was greater than three times the level at the bottom of the depression and approximately equal to the income received in 1939. On the other hand, the entrepreneurial income of nonagricultural business doubled from the bottom of the depression to 1937, though it remained well below the 1929 total. With the rearmament boom in 1941, further large gains were made, agricultural income rising to \$6,300,000,000 and the nonagricultural segment reaching \$9,600,000,000.

Salaries and wages also benefited from the recovery movement, though at a slower pace than the profit incomes. By 1937 the influence of increased employment at higher wages had raised salary and wage income to slightly less than \$45,000,000,000, approximately 50% higher than the level at the bottom of the depression. During 1938–39 a gain of about the same magnitude was made, the total rising to \$60,800,000,000 in 1941. During this entire period, the rising trend of employment and the increase in the average working week were the primary factors responsible for the rise in total wage payments. There was, however, a significant increase in wage rates and a shift in the percentage of the labour force that was employed in the higher-paying industries.

Supplements to salaries and wages, which are accruals to the income of labour through pension and other benefit plans, became an important segment of the national income for the first time during this period. While there had been such supplements on a small scale for many years, the enactment of a national social security system raised this element of income to significant magnitudes. By 1937 the supplements amounted to \$3,300,000,000.

Income from interest and rents was the only component of national income to remain fairly stable as the economy moved from depression to prosperity. Although there had been a large decline in this component from 1929 to 1932, the aggregate rose from \$7,100,000,000 in 1932 to \$8,000,000,000 in 1941. A major influence behind this stability was the decline in interest rates which occurred during these years.

The changes in the distributive shares of national income which occurred during the years of World War II differed in several important respects from the pattern of the recovery period. Although the level of economic activity rose to record highs as the nation's economy was fully mobilized for war, and though this expansion was particularly great in the mining and manufacturing areas because of the requirements of the munitions program, corporate profits rose only moderately after 1941. The peak reached in 1944, slightly less than \$10,000,000,000, compared with the 1941 total of \$8,500,000, oo. The moderateness of this rise in net corporate earnings resulted primarily from the heavy taxes on corporate income which were imposed during World War II. The normal rate of tax on corporate income was increased to 40% and, more importantly, an excess profits tax with a very heavy rate

schedule severely limited the increase in net corporate earnings. Moreover, war contracts were in many cases renegotiated at lower prices in an effort to limit profit margins to reasonable proportions.

Another significant difference from the prewar pattern was the large rise which occurred in income from interest and rents. The 1941 total of \$8,000,000,000 increased to \$11,800,000,000 by 1945. The most important influence behind this increase was the rise in government interest payments that occurred as a consequence of a tremendous increase in the national debt. In addition, rent income rose materially, even though rental rates were fairly well held down by administrative controls, because rental units were so fully and so continuously occupied during World War II.

The largest wartime increase in income occurred in the agricultural field when net returns approximately doubled between 1941 and 1945. The net agricultural income of \$12,500,000,000 in 1945 far exceeded any peacetime year. It was caused in part by the large increase in agricul tural production, but the much more important influence was the sharp advance of agricultural prices. Prices in this segment of the economy were less well controlled during World War II than was the case with other types of commodities and services.

The income of nonagricultural entrepreneurs also rose materially, reaching a figure of \$13,100,000,000 in 1945 as compared with \$9,600,000,000 in 1941. Higher prices and a greater volume of business were the significant factors accounting for this expansion of income.

In terms of dollars, the largest increase in income during World War II was in the salary and wage component. Total salaries and wages of \$60,800,000,000 in 1941 advanced to \$112,800,000,000 in the peak war year of 1944. Many factors contributed to this expansion. Probably the most important was the increase in the number of persons employed, including those serving in the armed forces of the nation. The volume of employment was also increased by a substantial lengthening of the average work week as every effort was made to increase the production of the implements of war. As overtime was paid for at premium rates of pay, the lengthening of the work week contributed materially to the increase in wages. Another significant factor which tended to raise the total flow of wages by more than the increase in hours worked was the fact that the increase in employment hours came in substantial measure in the manufacturing and mining industries, where wages were higher than the national average. In addition, there was a tendency throughout World War II for wage rates to increase because of the shortage of labour. However, after the Little Steel formula was established in 1942, the government's control of wage rates effectively limited their increase for the wartime period.

The year which followed the end of World War II, being one of reconversion and inflation, could not be taken as establishing the postwar pattern for the distributive shares of national income. Many abnormalities arose, though it was evident that some of the peacetime characteristics of the economy were also emerging. By and large, the components of national income rose in 1946, the only exception to this tendency being in the area of wages and salaries. The decline in this area, which was initiated in 1944, was entirely because of shrinkage of the labour force and the decline in overtime work which followed the ending of World War II.

A reduction in the size of the armed forces, which allowed many younger men to resume their education, and the return of many women to the home as the war pro-

duction program was eliminated led to a fairly sharp decline in wage and salary payments. The decline was somewhat offset by the general increase in wage rates which occurred in 1946. In large measure, the reduction in pay envelopes that came as overtime pay was eliminated was offset by wage rate increases. The total wage bill of the nation dropped from \$112,800,000,000 in 1944 to \$106,000,000,000 in 1946.

Corporate profits also declined in 1945 with the liquidation of the war production program. In the early part of 1946, profits were still being depressed by this factor as well as by a rather widespread series of strikes which occurred at that time. However, the elimination of the excess profits tax at the end of 1945 and the large expansion of production which was initiated after the first quarter of 1946 produced a very favourable profit picture for the year as a whole. Preliminary estimates of profit for 1946 of \$12,000,000,000 showed this component of income at a new record high level.

The net income of unincorporated business also rose materially in the first postwar year. In the case of agricultural income, this was because of the inflationary trend of prices which followed the relaxation of wartime price control. Agricultural income rose to an estimated figure of \$14,400,000,000,000, a record high. The expansion in nonagricultural business income was of similar proportions. It, too, resulted in large part from rising prices, though perhaps equally important was the increase in civilian goods which became available after the end of World War II.

Gross National Product.—As the national income measures the income to the various factors of production arising from current productive activity, it necessarily follows that the general trend of the gross national product over the decade was similar to that of the national income. The value of national output fell precipitously during the depression years to a low of \$55,400,000,000 in 1932 and in the years of recovery followed a generally upward trend as the volume of business activity expanded. The gross product reached \$70,800,000,000 in 1935 and continued to rise in the years before the outbreak of World War II, with the exception of the recession year of 1938, to a total of \$88,600,000,000 in 1939. The pace of the expansion was considerably accelerated under the stimulus of the rearmament program, with the total rising to \$120,200,000,000 in the short space of 2 years.

The statistics on the components of the gross national product, given in Table III on page 633 show the character of the depression and later recovery. Of the three major components of the gross national product, government expenditures, private gross capital outlays and consumers' expenditures, the severest decline from 1929 to 1932 came in the capital goods area. The drop from \$17,600,000,000 to \$2,200,000,000 was so drastic as to stamp the depression as primarily a failure in the investment of

capital. While all types of capital outlays declined, it may be seen that the drastic curtailment in construction activity and the severe liquidation of business inventories in 1932 were the factors which in magnitude were most responsible for the disastrous deflation. By contrast, the drop in consumers' expenditures was much less severe, though the large proportion of total output accounted for by this segment meant a large decline in the dollar total.

In the years of recovery, these downward trends were reversed with a new element added, the substantial increase in government expenditures prompted by the pump-priming philosophy of the Roosevelt administration. It may be noted that government expenditures declined very little during the depression. But in the years after 1932 this component of the gross product was greatly expanded. Expenditures by the federal government reached \$3,900,000,000 in 1935 and rose further to \$7,900,000,000 in 1939. Capital expenditures responded to this stimulus in the sense that inventory liquidation was halted and there was a substantial increase in outlays for durable equipment. Expenditures for construction, however, remained sluggish, the total of \$3,600,000,000 in 1939 being still less than half the volume of 1929.

The driving force behind the expansion after 1939 was, of course, federal expenditures for goods and services required in the rearmament effort. While there was a significant increase in war outlays during 1940 because of the inauguration of the defense program in that year, the real results of the defense program became fully evident in 1941, when war expenditures rose to \$13,300,000,000. Economic activity of all kinds was intensified, and there was a great effort to increase the production of goods before the shortage of materials made it impossible. Gross capital outlays rose to the highest figure on record to that time, \$19,100,000,000 in 1941. The prospect of shortages contributed to the large accumulation of inventories, and the output of producers' durable equipment attained a record figure of \$8,900,000,000. Private construction activity was the only area which did not reach a new high level, partly because a considerable quantity of materials was already being utilized for the government's construction program.

There was also a notable expansion in consumers' expenditures as the volume of income flowing to consumers rose with the level of economic activity. In the space of two years, this aggregate increased from \$61,700,000,000 to \$74,600,000,000 in 1941. As prices were somewhat lower in that year than in 1929, this meant that the real volume of goods flowing to consumers was much higher than ever before.

After Pearl Harbor, the U.S. rearmament effort was converted to a program of total economic mobilization. What occurred in the following two years was best reflected in

the government's war expenditures. This segment of total output skyrocketed to \$81,300,000,000 in 1943 to make the government's budget the dominant element in the economic situation. Under this stimulus, the gross national product underwent an unprecedented expansion, rising by 50% to an aggregate of \$187,400,000,000 in 1943.

	7	able II		tional In-			ve Shares				
ltem .	1929	1932	1935	1937	1939	1941	1942	1943	1944	1945	1946*
Total national income Total compensation of	\$83.3	\$40.0	\$55. 7	\$71.5	\$70.8	\$96.9	\$122.2	\$149.4	\$160. 7	\$161.0	\$164.0
employees	53.1	31.7	37.5	48.3	48.1	64.5	84.1	106.3	116.0	114.5	109.2
Salaries and wages Supplements to salaries	52.6	31.0	35.6	44.9	44.2	60.8	80.8	103.1	112.8	111.4	106.0
and wages	.5	.6	1.9	3.3	3.8	3.7	3.3	3.2	3.2	3.1	3.3
Net income of corporations.	7.2	-3.6	1.7	3.9	4.2	8.5	8.7	9.8	9.9	9.0	12.0
Net dividends	5.9	2.7	2.9	4.7	3.8	4.5	4.3	4.3	4.5	4.5	5.0
Corporate savings	1.3	-6.4	-1.3	8	.4	4.0	4.4	5.5	5.4	4.5	7.0
Net income of noncorporate											
business	13.6	4.8	9.5	11.9	11.2	15.8	20.6	23.5	24.1	25.6	29.4
Agriculture	5.2	1.5	4.1	5.1	4.3	6.3	9.7	11.9	11.8	12.5	14.4
Other	8.5	3.4	5.4	6.8	6.9	9.6	10.9	11.6	12.3	13.1	15.1
Interest and net rents	9.5	7.1	7. 1	7.4	7.4	8.0	8.8	9.7	10.6	11.8	13.0

*Preliminary, based on partial year data. Source U.S. Department of Commerce.



"Roll Out the Barrel." Shoemaker of the Chicago Daily News criticized price control as the cause of continuing scarcities among consumers' goods following the close of World War II, although postwar national incomes remained high

It may be observed that both in 1940 and 1941 the expansion of war production had not required curtailment of civilian output. In fact, both capital formation and consumers goods and services steadily increased. This was made possible because of the large pool of unemployed economic resources, both men and machines, that was available at the beginning of the rearmament program.

After 1942, however, this situation came to an end as the value of war output increased more than the total gross national product. It meant that the rising flow of war matériel was produced in part by reducing various categories of nonwar output. Both federal nonwar and state and local government utilization of current production were decreased. The major cut, however, occurred in the area of private capital outlays, where the 1941 total of more than \$19,000,000,000 was reduced to \$7,600,000,000 in 1942 and to \$2,000,000,000 by 1944. Private expenditures on construction and producers' durable equipment were substantially reduced, and, in addition, the large increase in inventories of 1941 was converted into a steady decrease throughout World War II.

In terms of dollars spent, consumers purchases of goods and services increased materially from 1942 on. The expenditure total of \$74,600,000,000 in 1941 had by 1944 reached \$98,500,000,000. This increase, however, was mostly because of the influence of rising prices, although even in terms of dollars of constant purchasing power there was apparently a small increase in consumers expenditures over the period. That it proved to be possible to maintain consumers' goods and services at so high a level in the face of the tremendous requirements of the war program was because of two important factors. In the first place, the total of consumers' purchases was larger than current production by virtue of the drawing down of business inventories of consumers' goods. In the second

place, the fact that the United States did not have to allocate manpower meant that the restrictions of consumers' goods were largely the result of shortages of raw materials and imported commodities. Because the war program consisted mostly of munitions and munitions manufacturing facilities, the material shortages were largely confined to durable goods. Consumers' durable goods declined fairly sharply, and this decline would have been very much greater had it not been for previously accumulated inventories. While there were isolated shortages among the nondurable goods, on the other hand, many of these commodities as well as virtually all consumers' services were increased. The decline in consumers' durable goods, therefore, was more than offset by increases in nondurable goods and services.

By the beginning of 1944, the government's war production program had virtually reached its peak; it continued at a fairly stable level until the end of World War II in Europe. There was likewise relative stability in the level of the gross national product, though the tendency for prices to increase moderately led to a further rise in this aggregate. In 1944 government war expenditures were \$83,700,000,000, and the gross national product was \$197,600,000,000. Thus, the war effort was utilizing more than 40% of gross output. The output available for private use, approximately \$100,000,000,000, was somewhat higher than the comparable figure for 1941 in dollar terms, but after allowance for the rise in prices, it was substantially lower. As previously mentioned, the curtailment had come entirely in the category of private capital outlays.

With the successful conclusion of World War II, there occurred a sharp liquidation of the war production program and a rapid demobilization of the nation's armed forces. As a result, government war expenditures declined sharply in the second half of 1945 and the first half of 1946. From the wartime peak in 1944, war expenditures dropped to \$69,400,000,000 and \$17,600,000,000 in the 2 succeeding years.

The immediate effect of the liquidation of the war effort was a decline in total output. However, the freeing of economic resources from the requirements of war made possible an expansion of nonwar economic activities. The reconversion of industry was so rapid that by the first quarter of 1946 the low point in total production was reached, so that for the rest of the year the increase in civilian goods and services more than offset the decline in the military area. Even in 1945 all the nonwar components of the gross national product showed increases over the preceding year. These increases were far exceeded by the expansion in 1946. The dollar totals were inflated to some extent by the sizable rise in prices which occurred, particularly after the middle of the year, but the major part of the increase reflected a rise in the real flow of goods and services.

Just as private capital outlays had contracted most sharply during World War II, so did they experience the largest increase during the reconversion period. From a low of \$2,000,000,000 in 1944, private gross capital formation rose to \$29,300,000,000 in 1946, a figure 50% larger than the previous record of 1941. The construction industry made a substantial beginning toward a peacetime basis and the output of machinery and equipment was at capacity levels. In addition, the necessity of filling the raw material and goods-in-process pipeline in the civilian sector of the economy produced an exceedingly large increase in business inventories. Furthermore, the tremendous shortages of goods in foreign countries led to a record high of net exports, supported as it was by govern-

Table III.—Gross U.S. National Product or Expenditures† (In billions of dollars)

ment loans and by the large volume of foreign assets that had been accumulated during World War II.

Consumers' expenditures rose to the unprecedented level of \$126,000,000,000, reflecting higher prices as well as the increased volume of goods. Expenditures for durable goods to \$13,700,000,000, more than double the 1944 total, as the reconversion of these industries became effective in increasing the flow of final products. More surprising was the heavy demand for nondurable goods. This reflected the decrease in purchasing of food and other nondurable items by the armed forces, as well as the increased buying which occurred as the civilian population replenished stocks

of goods that had been depleted during World War II. In the closing month of 1946, production was somewhat restricted by a major strike in the bituminous coal industry. While the reconversion of industry had been substantially completed, the economy was still characterized by severe shortages in many lines of goods. It was apparent, however, that the production of finished goods would be further increased in 1947 and that the area of shortages would be materially reduced.

Disposition of Income.—The statistics showing the breakdown of national income by use of funds are contained in Table IV. The primary purpose of this breakdown of the national income is to show the impact of taxes on the flow of personal income, and the allocation which consumers make of their income between consumption expenditures and savings.

In the recovery period, the pattern of income use was typical of the rising phase of the business cycle. Income payments rose from \$47,400,000,000 in 1932 to \$70,800,000,000 in 1939. Tax payments kept pace with this increase, though by 1939 the level of taxes was higher than in 1929 because of the higher rate schedules that were in force. The distribution of disposable income between savings and expenditures followed a normal pattern during this period.

During 1941-45, however, the requirements of the war economy produced many abnormalities. The phenomenal increase of the national income has already been noted; a comparable increase occurred in income payments to individuals. This aggregate advanced from \$70,800,000,000 in 1939 to \$156,800,000,000 in 1944, but as the high wartime rates of taxation were imposed tax payments began to cut heavily into the income flow. From the level of \$3,100,000,000 in 1939, personal taxes increased to \$19,400,000,000 in 1944 with the result that the expansion of disposable income was limited to \$137,400,000,000.

The main abnormality of World War II came in the proportion of disposable income that was spent. This was restricted by three factors in the wartime economic situation. First of all, there was the limit on the supply

ltem .	1929	1932	1935	1937	1939	1941	1942	1943	1944	1945	1946*
Gross national product or expenditure Government expenditures for goods and	\$99.4	\$55 . 4	\$70.8	\$8 <i>7.7</i>	\$88.6	\$120.2	\$152.3	\$187.4	\$197.6	\$199.2	\$190.6
services		10.2	11.9	13.6	16.0	26.5	62.7	93.5	97.1	83.6	35.3
Federal government	2.7	2.4	3.9	6.1	7.9	18.6	55.3	86.2	89.5	75.8	26.5
War	-			-	1.4	13.3	50.3	81.3	83. <i>7</i>	69.4	17.6
Nonwar		****			6.5	5.3	5.0	4.9	5.7	6.3	8.9
State and local government		7.8	8.0	7.5	8.1	7.9	7.4	7.4	7.7	7.9	8. <i>7</i>
Output available for private use		45.2	58.9	74.1	72.6	93. <i>7</i>	89.6	93.9	100.5	115.5	155,3
Private gross capital formation		2.2	6.7	11.6	10.9	19.1	7.6	2.5	2.0	9.1	29.3
Construction	8.3	1.8	2.1	3. <i>7</i>	3.6	5.3	2.9	1.6	1.6	2,6	8.4
Producers, durable equipment	7.3	2.4	4.0	6.3	5.5	8.9	5.1	3.1	4.0	6.6	10.6
Net change in business inventories .	1.6	2.3	.2	1.1	.9	3.5	5	6	-1.7	6	5.2
Net export of goods and services.	.6	.2	.2	.1	.8	1.2	‡	-1.5	-1.8	.6	5,2
Net exports and monetary use of											
gold and silver	2	.1	.2	.4	.2	.2	.1	1	1	1	‡
Consumers' goods and services	70.8	43.0	52.2	62.5	61.7	74.6	82.0	91.3	98.5	106.4	126.0
Durable goods		4.2	5.7	7.6	6.4	9.1	6.3	6.6	6.7	7.7	13.7
Nondurable goods and services	60.9	38.8	46.5	54.9	55.3	65.5	75 . 7	84.8	91.8	98.7	112.3

^{*}Preliminary, based on partial-year data.
†Detail will not necessarily add to totals because of rounding.
‡Less than \$50,000,000.

Table	IV.—Disposition	on of l	u.s.	National	Income†
	(În bill	ions of	f dol	llars)	•

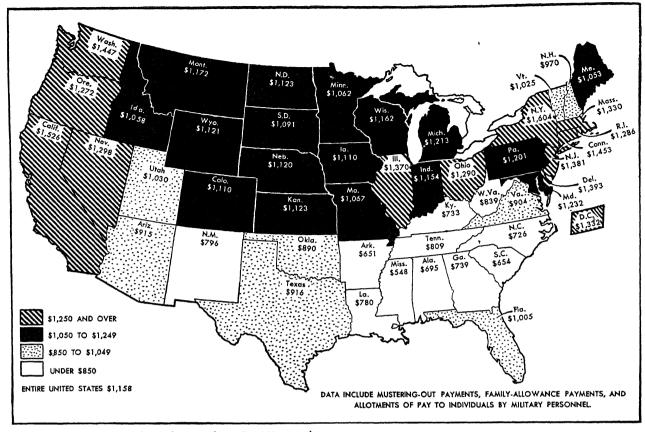
ltem .	1929	1932	1935	1937	1939	1941	1942	1943	1944	1945	1946*
National income	\$83.3	\$40.0	\$557	\$71.5	\$70.8	\$96.9	\$122.2	\$149.4	\$160.7	\$161.0	
Add: Transfer payments	.7	1.3	1.8	1.7	2.4	2.5	2.7	3.2	5.3	8.1	10.8
Less: Corporate savings	1.2	-6.4	-1.3	8	.4	4.0	4.4	5.5	5.4	4.5	7.0
Contributions to social insurance funds	.2	.2	.2	1.7	2.0	2.6	3.2	3.8	3.9	3.8	4.2
Equals: Income payments to individuals	82.6	47.4	58.6	72.4	70.8	92.7	117.3	143.1	156.8	160.7	164.0
Less: Personal taxes and non-tax payments	3.0	1.9	2.3	3.1	3.1	4.0	6.7	18.6	19.4	21.2	19.1
Federal	1.3	.4	.8	1.4	1.3	2.0	4.7	16.6	17.4	19.0	16.9
State and local	1.7	1.5	1.5	1.7	1.9	1.9	2.0	2.0	2.0	2.1	2.2
Equals. Disposable income of individuals	79.6	45.6	56.3	69.2	67.7	88.7	110.6	124.6	137.4	139.6	144.0
Less: Consumer expenditures	708	43.0	52.2	62.5	61.7	74.6	82.0	91.3	98.5	106.4	126.0
Equals. Net savings of individuals	8.8	2.6	4.1	6.7	6.0	14.2	28.6	33.3	38.9	33.1	18.0

*Preliminary, based on partial-year data.
†Detail will not necessarily add to totals because of rounding.

of goods and services that could be produced for consumers in view of the large requirements of the war effort. As previously indicated, the supply of durable goods was actually curtailed in physical terms. But even the supply of nondurable goods and services rose much less than would have been expected with the increase in income available because of a sheer lack of economic resources. The second factor which limited consumers' expenditures was the effectiveness of government price control and rationing. These programs meant that the amount of dollars spent for the available supply of goods was held well below what would have been spent if free bidding in the market place had been permitted. The third factor was the encouragement given to saving on the part of consumers by the war bond campaigns and other means.

The result of all these factors was that consumer expenditures rose much less proportionately than the increase in disposable income and that a much greater proportion of income was accumulated in the form of savings. From a level of \$6,000,000,000 in 1939, the net savings of individuals rose to \$38,900,000,000 in 1944. This was an unprecedented savings level and one which could not be expected under peacetime conditions.

With the ending of World War II, this process began to reverse itself. Taxes were reduced moderately at the end of 1945 but, on the other hand, there was a large increase in government transfer payments largely in connection with the G.I. Bill of Rights which raised disposable income in 1946 above its wartime level. The large shift came, however, in the proportions of income spent and saved. Consumers expenditures rose by \$20,000,000,000 in 1946, while the level of savings dropped to \$18,000,000,ooo for that year from its high of almost \$40,000,000,000 in the second quarter of 1945. The removal of wartime restrictions had reduced the level of savings to about a normal proportion of income in the course of little more than a year. (See also Budgets, National; Business Re-VIEW; DEBTS, NATIONAL; WEALTH AND INCOME, DISTRIBU-TION OF.) (M. Gt.)



U.S. per capita income for the civilian population in 1945, according to data prepared by the U.S. department of commerce

Great Britain

Under conditions of war the ordinary difficulties of measurement of "national income" were at their greatest. Changes in the character of production make peacetime indexes of prices partly inapplicable; and, apart from this, prices are subject to a large measure of distortion by special controls, subsidies and taxes. In time of war a high proportion of the national income is consumed on government account; and the methods of valuing this large slice of the total are necessarily to some extent arbitrary. It was not possible to say, with any approach to accuracy, by how great a percentage the physical product of industry was altered during World War II; for there was no way of adding up all the goods and services produced except in terms of money values, and, if these were distorted, the entire measurement was thrown out. Accordingly, what is said about both income and product must be taken as true only on certain assumptions, and even so as subject to a large margin of error.

The only source from which it was possible to derive any estimates of the national income of the United Kingdom during the decade 1937–46 was the series of White Papers issued annually by the government after 1941 in connection with the budget. These papers, prepared in the central statistical office, attempted to present a picture of the course of national income and outlay after 1938; but it was not possible to link them directly to earlier unofficial estimates of national income made by Prof. A. L. Bowley and Colin Clark. Table V, taken from the White Paper of April 1946, gives the general picture.

This table gives several different sets of figures corresponding to different definitions of national income. The final totals (series 11) correspond most closely to what the

ordinary man understands by the term, as they represent estimates of the total prices paid, or imputed, in respect of all goods and services currently produced. These totals include the part of current production that is needed to make good depreciation and obsolescence of capital goods used in production; but obviously from the figures the allowance for these purposes was kept very low during the years of World War II. The totals (series 11) include also all indirect taxes since these enter into the selling prices of the goods produced; but as against this all subsidies used to reduce prices are deducted. Thus, the size of the national income, in this sense, is affected both by subsidy policy and by taxation, especially by shifts between direct and indirect taxes. For these reasons, as well as because of price changes, the totals of series 11 give no effective indication of real changes in either income or product.

The totals of series g are somewhat more informative, as they exclude indirect taxes and subsidies. They are, however, of course affected by price changes and measure only the money value of the national product, not its real amount. The totals of series 3, giving the aggregates of private income (made up of personal incomes and of impersonal or corporate incomes, such as company reserves), are to some extent misleading since they include those parts of private income which are paid out of taxation; e.g., national debt interest and social insurance and other benefits as far as they fall on public funds. These "transfer payments" are excluded from the totals of series 5; and these totals, plus the small sums derived from public trading and ownership of property, make up those of series 7. Thus, for measuring gross money income, we start from the totals of series 11, and for measuring the value of output we start from the totals of series 7.

The next step is to do what can be done to convert

Table V.—National Income and Product of the United Kingdom, 1938–45

these totals into estimates of real income and product by relating them to changes in the level of prices. Here the difficulty is that no index measuring all price changes exists, or indeed can exist. There are various indexes of particular groups of price changes—wholesale prices, retail

prices and cost of living, import prices, export prices, wage-rates and so on—but none of these is wholly suitable for use in converting the money income or the money value of the product into real terms. The index commonly used is that of wholesale prices; and this is clearly preferable to the cost-of-living index, which during the years of World War II was much affected by subsidies designed to keep down the prices of essential foods. The respective movements of the wholesale price and cost of living indexes from 1935 to 1940 are shown in Table VI.

Table VI.—Index of British Wholesale Prices and Official Index of British Cost of Living, 1935–46

1005						Wholesale		1041					Wholesale	Cost of Living
1935		٠			٠	8 <i>7.7</i>	92	1941	٠	٠	•		150.5	128
1936						93.0	95	1942					157.1	129
193 <i>7</i>						107.2	99	1943					160.4	128
1938						100.0	101*	1944	٠			-	1 <i>63.7</i>	130
1939						101.4	102	1945					166.7	131
1940						134.6	119	1946					1 <i>72.7</i>	131
*\$6	nt	1.	1	93	۰.	=100.								

Although wholesale prices appear to have risen much more than the cost of living, of which the official index was kept down a great deal by subsidies, much more than the actual cost of living as a whole, the prices of both imports and exports rose much more sharply than the general wholesale index. The figures are given in Table VII, since for some purposes, it would be more appropriate to use them as means of measuring the real changes in output.

If the figures of national income in terms of net product at factor cost are converted by means of the index of wholesale prices, the results are as shown in Table VIII. These converted totals at any rate come much nearer

Table VII.—Index Numbers of British Import and Export Prices 1938–45 (December of each year)

											Imports	Exports
1938											100	100
1939				٠							130	106
1940											154	135
1941							٠				164	152
1942											179	178
1943											188	191
1944											195	197
1945			٠			٠					197	184

the true measurement of real income and product than the crude money totals. It is probably not far off the truth to say that at the war peak the total output of the

Table VIII.—British National Income, 1938–45, Converted by Means of Wholesale Price Index (In millions of pounds)

		Net Produ	ct at Factor C	ost	Gross Incom	ne at Market	Pr	ices
		Unconverted	Converted	%	Unconverted	Converted		%
1	1938	£4,610	£4,610	100	£5,686	£5,686		100
1	939	4,960	4,895	106	6,114	6,030	0	106
	940	5,922	4,400	95	7,254	5,389		95
	941.	6.886	4.575	99	8,490	5,641		99
	942	7.600	4.838	105	9.327	5,937		104
	943	8.118	5.061	109	9,933	6,192		109
	944	8.401	5.132	111	10.1 <i>77</i>	6,217		109
	945	8.483	5.095	110	10,191	6,121		108

United Kingdom had risen by about 10%.

The national income and the national product were of course affected in opposite ways by the withdrawal of large numbers of workers for service in the armed forces and by the recruitment for productive occupations of many persons previously not "gainfully occupied," principally

	193	38 19	39 1940	1941	1942	1943	1944	1945	
1.	Personal income before tax £4,77	72 £5.0	10 £5.720	£6,400	£7,087	£7,643	£8.019	£8.351	
2.	Plus: Other private income tax	59 3	69 615	919	962	980	975	900	
3.	Private income before tax 5,03	31 5,3	79 6,335	7,319	8,049	8,623	8,994	9,251	
4.	Less: Transfer payments from public authorities to private	•	•	•		•	•	•	
		75 —4		522	-581	-652	-724	891	
5.	Private income from current economic activity 4,55	56 4,9	10 5,851	6,797	7,468	7,971	8,270	8,360	
	Plus: Public income from trading, property, etc			89	132	147	131	123	
	National income (or net product) at factor cost 4,61		50 5,922	6,886	7,600	8,118	8,401	8,483	
	Plus: Sums allowed for depreciation and maintenance . 47		85 5 05	515	520	520	520	520	
	Gross national product at factor cost 5,08		45 6,427	7,401	8,120	8,638	8,921	9,003	
	Plus: Indirect faxes net of subsidies 60		59 827		1,207	1,295	1,256	1,188	
1.	Gross national product at market value 5,68	86 6,1	14 7,254	8,490	9,327	9,933	10,177	10,191	

housewives or unemployed. The documents presented by the British government during the Washington loan negotiations of 1945 showed in summary form the effect of the wartime changes in total manpower and in its distribution between 1939 and 1944, when the war effort reached its height.

Table IX.—Distribution of Labour Force in Great Britain, mid-1939 and mid-1944 (In millions)

	Mid-1939	Mid-1944	Change
Armed forces and civil defense	0.6	5.2	+4.6
War industries (munitions)	1.4	5.0	+3.6
Direct export industries	1.3	0.3	-1.0
Other industries and miscellaneous		9.5	-2.8
Distributive trades		1.9	-1.0
Unemployed	1.3	0.1	-1.2
Total	19.8	22.0	+2.2

Thus, a loss of 4,600,000 persons to the armed forces and to civil defense was partly made good by the absorption of 1,200,000 unemployed and by an addition of 2,200,000 persons to the total occupied, leaving a net deficit of 1,200,000 for all forms of productive activity. The reduction of exports brought down this deficit to a mere 200,000; but this involved a fall in the volume of exports by at least 70% and led to a heavy deficit on the balance of payments, partly made good by lend-lease.

We may now go back to the totals of net national product (series 7 of Table V), and consider how they were applied during the years of World War II, as shown in Table X.

Table XI compares personal consumption at 1946 prices with the same consumption valued at the prices prevailing in 1938.

Thus, the volume of personal consumption fell between 1938 and 1943 by more than 20%, and the level of 79% of prewar consumption was maintained only by making large drafts on capital, both by selling overseas investments and by letting home productive equipment run down. The total decumulation of capital at factor cost for the years 1940-45 is estimated at £5,829,000,000, of which

Table XI.—National Cost of Personal Consumption (United Kingdom) at 1946 and at 1938 prices (1938=100)

	1938	1939	1940	1941	1942	1943	1944	1945
At 1946 prices	 100	102	105	107	111	111	119	127
At 1938 prices								

four-fifths was accounted for by loss of overseas assets or the piling up of new foreign debts. The Washington loan documents showed that up to June 1945 Great Britain had sold external capital assets valued at £1,118,000,000 and had incurred new foreign debts of £2,879,000,000, besides a net loss of £152,000,000 in gold and dollar reserves and other losses put at £49,000,000, giving a total of £4,198,000,000, apart from obligations under lend-lease. Internal disinvestment was put at £885,000,000 up to the end of 1944.

The total population of Great Britain, excluding Northern Ireland, rose from about 46,466,000 in June 1939 to 47,646,000 in June 1945, that is, by 2½%. Thus, the reduced total consumption was spread over a larger number of persons. As demobilization proceeded, the return of

Table X.—Composition of Net National Product of the United Kingdom 1938–45
(In millions of pounds)

											1938	1939	1940	1941	1942	1943	1944	1945
Consumption at net cost (a) Personal	on.	:	:	:	:	:	:	:	:	:	456 338 214	£3,659 473 754 74 4,960	£3,796 483 2,595 952 5,922	508 3,717	£4,010 531 3,988 -929 7,600	£4,006 532 4,552 -972 8,118	£4,285 544 4,546 -974 8,401	£4,582 578 4,147 —824 8,483
Consumption	:	:	:	:	:	:	:	:	:	:	88 7 5	83 15 2	72 44 16	63 54 17	60 52 —12	56 56 —12	58 54 —12	61 49 10

(+)Expenditure at market values less indirect taxes plus subsidies.

manpower from the fighting services to production was partly offset by the withdrawal from industry of elderly persons who had postponed retirement and of women who returned to family life. The total working population, including those in the forces, fell from 22,281,000 in June 1943 to 20,232,000 in June 1946. Of these, the number of males fell from 15,028,000 to 14,569,000, and that of females from 7,252,000 to 5,663,000. The numbers recorded as unemployed rose from 60,000 to 376,000, and there were in June 1946, 750,000 demobilized persons from the armed forces who had not yet taken up civil employment. In these circumstances, the total volume of industrial production could not be expected to rise. There were, in fact, in June 1946 fewer persons employed in civil occupations than in June 1943, though there had of course been a considerable transference from the war industries to normal production. The unemployment that

existed was mainly transitional: there was, in the whole economy, a marked shortage of manpower, and this seemed likely to continue in view of the decline in the number of new juvenile entrants because of the fall in the number of births in the interwar years.

On the average of the years 1936–38, the home-produced national income of the United Kingdom was supplemented by a net income from overseas of £352,000,000, made up of £203,000,000 from foreign investments, £105,000,000 from shipping services and £44,000,000 from financial, insurance and other services. By 1945 net income from foreign investments had shrunk to about £97,000,000, without allowing for sums due on new debts incurred; and there had been a heavy reduction in British-owned shipping tonnage, from 22,000,000 deadweight tons to about 16,000,000.

Thus, on all accounts, Great Britain emerged from World War II with real national income and immediate

The national product of Great Britain during World War II was partially affected by the removal of a large segment of its labour force to the armed forces. This shiff in manpower was compensated for in part by the entrance of women into industry and, as shown above, the agricultural land army



prospects seriously impaired. Even if it had been possible to convert all the capacity used in producing war goods to production for peacetime needs, the position would have been none too good in face of the changed external position of the British economy. But the position was in fact much worse than this, because the disinvestment in the industries which were cut down during World War II, and the consequent failure to keep plants up-to-date, involved both a great difficulty in changing over rapidly from war to peace production and the application of a substantial part of the currently produced national income to the production of new capital goods, as well as to the replenishment of stocks. It was, moreover, imperative to devote a high proportion of the available capacity to production for export, in order to pay for necessary imports of foodstuffs and materials. It was estimated that, in order to reach a satisfactory postwar balance of payments, it was necessary to aim at a level of commodity exports 75% higher in volume than before World War II. (See also BUDGETS, NATIONAL; BUSINESS REVIEW; DEBTS, NATIONAL; WEALTH AND INCOME, DISTRIBUTION OF.) (G. D. H. C.)

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Income Tax

See TAXATION.

Indemnity, War

See REPARATIONS (WORLD WAR II).

India

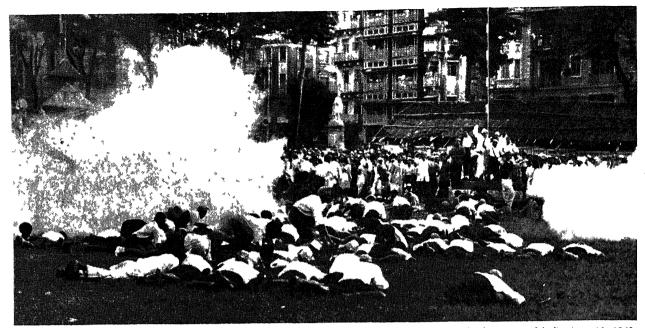
A subcontinent projecting from the mainland of Asia, India lies between 8° and 37° N.; at the end of 1946, it comprised 11 major or "autonomous" provinces, 5 minor areas directly administered by the central British government and 562 states under Indian rulers. The last were scattered about the subcontinent and varied greatly in size and importance, as well as in the powers enjoyed by their rulers. British India (the 11 major provinces and 5 minor areas) had its capital at New Delhi and was under a viceroy and governor-general, who was also the representative of the crown in its relations with the Indian states. Area: 1,581,410 sq.mi., of which the native states and agencies totalled 715,964 sq.mi.; pop.: (1931 census) 338,-119,154; (1941 census) 388,997,955 (+15%). Chief cities (1941 census): Delhi (cap., 521,849); Calcutta (2,108,891); Bombay (1,489,883); Madras (777,481); Hyderabad (739,-159); Lahore (671,659); Ahmedabad (591,257). Languages (1931): Indo-European (Hindustani, Bengali, Punjabi, Marathi, etc.) 73.5%; Dravidian (Telugu, Tamil, etc.) 20.5%; Tibeto-Burmese 3.7%; Munda 1.5%; Tai-Chinese 0.7%; others 0.1%. Religions: Hindu 65.5%; Mohammedan 24.3%; Christian 1.6% (slightly more than half of them Anglican and Protestant; the rest Roman Catholic); Sikh 1.5%; Buddhist 0.6%; Parsee 0.3%; tribes and others 6.2%. Ruler: George VI, king emperor. Viceroy and governor general: Lord Linlithgow (April 1936-1943); Field Marshal Lord Wavell (after Oct. 20, 1943).

Political Landmark.-The Government of India act, 1935, was a landmark in political history, for it brought the country a further step on the road to self-government. The provinces were to enjoy full responsible government of the parliamentary type. At the centre there was to be an all-Indian federation, in which for the first time representatives of British India and the Indian states were to sit together. Dyarchy, abolished in the provinces, was to be reproduced at the centre; foreign affairs and defense were to be reserved to the governor general, while the remaining portfolios were to be transferred to ministers responsible to the federal legislature. The federal part of the act was to come into force when the requisite number of princes signed the instrument of accession to the federation. As this number was not forthcoming by July 1936, it was decided to proceed with the provincial provisions, leaving the centre unreformed; this meant that the whole executive remained responsible to the secretary of state and parliament. The first elections under the act were held in 1937, and resulted in the return of representatives of the Indian National Congress party in a majority in 8 out of the 11 provinces. In the remaining three, coalition governments with Moslem premiers were formed. Thanks largely to the co-operation of the Indian civil service, the experiment was a success on the whole, and much useful legislation was passed. Communal tension, however, was increased, especially in the limited provinces, where there was a powerful Moslem minority.

On Sept. 3, 1939, hostilities broke out with Germany. India, not having attained dominion status, found herself automatically involved in war without the formal assent of the legislature. Congress thereupon withdrew its ministries from the provinces where it had a majority "in order to dissociate India from the war, and to enforce the Congress determination to free India from foreign domination." It was stated in a resolution passed at its Ramgarh session (March 20, 1940) that "Congress considers the declaration by the British government of India as a belligerent country, without any reference to the people of India, as an affront to them which no self-respecting and freedom-loving people can accept or tolerate-Congress therefore strongly disapproves of Indian troops being made to fight for Great Britain, and of the drain from India of men and material for the purpose of the war." The Defense of India bill was, however, passed with the consent of the other political parties, including the Moslem league.

In 1940 the war took a disastrous turn for the Allies. The Italian forces in East Africa threatened the vital lines of communications running through the Suez canal and the Red sea. Thanks to the 4th and 5th Indian divisions, however, the Italians, though greatly superior in numbers, were routed after a hard-fought campaign. The Indian divisions were then sent to North Africa, Syria and Iraq.

"August Offer."—Meanwhile, Lord Linlithgow, who had become viceroy in 1936, was untiring in his efforts to bring the Indian political parties together. In Aug. 1940 he made what was known as the "August offer." Its main provisos were: (1) it reaffirmed that India's goal was free and equal partnership within the British commonwealth; (2) it undertook that, immediately after the war, a body representative of the principal elements in Indian national life should be set up to devise the framework of a new constitution, according to their own political, economic and social conceptions; (3) it stipulated that power should not be transferred to any party whose authority



Riots broke out in Bombay and other cities of India Aug. 10, 1942, the day following Gandhi's arrest by the British

was denied by powerful minorities; (4) it stated that, while sweeping constitutional changes could not be carried out in wartime, the viceroy would invite representative Indians to join his executive council, and a war advisory council would be set up.

The offer was rejected by the Indian National congress, which declared that it would accept nothing short of complete independence, and by Mohammed Ali Jinnah, president of the Moslem league, who demanded the setting up of Pakistan, or separate Moslem states in northwest and northeast India. (See map, p. 644.)

Fresh disasters were in store when on Dec. 7, 1941, Japan launched its attack on Pearl Harbor. The Japanese land armies advanced through Malaya, and the great naval fortress of Singapore, guarding the entrance to the Indian ocean, fell on Feb. 15, 1942. Burma was invaded. The British evacuated Rangoon and Mandalay and fell back to the Indian frontier, carrying with them the bulk of the British and Indian civil population. In military circles, the invasion of India seemed imminent; it appeared doubtful whether the Japanese advance could be stemmed with the forces available.

But this had little effect on Indian party politics. Pandit Jawaharlal Nehru declared that co-operation with Britain in the war-effort was unthinkable, and the Moslem league warned the Indian government that attempts to appease Congress by opposing Pakistan would be resisted by force. Even in moderate circles, suspicions of British integrity had been roused by the misunderstanding which had arisen over clause 3 of the Atlantic Charter, which, Winston Churchill declared, applied primarily to "the nations under the Nazi yoke." The only Congress leader who took a realistic view of the situation was Chakravarti R. Rajagopalachari, the veteran premier of Madras, who toured the province urging the people to resist the invader to the death, and put forward a powerful plea for Hindu-Moslem conciliation and the whole-hearted support of the British war-effort in the face of the common peril. But his words fell on deaf ears.

The Cripps Mission.—On March 11, 1942, Churchill announced in the house of commons that the war cabinet had agreed unanimously on conclusions, which they believed to be just and final, for present and future action in

India, and that the lord privy seal, Sir Stafford Cripps, who had volunteered for the task, would go to India to satisfy himself that these would achieve their purpose. Churchill said that Sir Stafford would strive, in the name of the British government, to procure the necessary measure of assent, not only from the Hindu majority but also from the great minorities, among whom the Moslems were the most numerous and on many grounds preeminent. He would also consult with the viceroy and the commander in chief on the military situation.

Sir Stafford Cripps arrived in India with the draft declaration on March 23. Briefly summarized, its proposals were as follows: (1) the creation of an Indian union constituting a dominion, associated with the United Kingdom and other dominions by a common allegiance with the crown, but equal to them in every respect; (2) the setting-up, immediately upon the cessation of hostilities, of a body elected by the provincial legislatures to frame a new constitution for India; (3) participation of the Indian states in the constitution-making body; (4) the right of any province of British India to retain its existing constitutional positions; (5) during the interim period, the responsibility for the defense of the country must rest with the British government, but the effective participation of Indian party leaders would be sought.

For the first time it was explicitly stated that the framing of the new constitution after the war was to be entirely a matter for Indians themselves, and that the goal was independence within or without the commonwealth. There was only a slight difference of opinion on the long-term proposals. But for the interim period it was stated that "H.M. government must inevitably bear the responsibility for, and retain control and direction of, the defense of India as part of the world war-effort," though "the task of organizing to the full the military, moral and material resources of India must be the responsibility of the government of India with the co-operation of the peoples of India. . . ." This failed to meet the demands of the Congress party, which insisted that the viceroy's executive council should be immediately replaced by a cabinet responsible to the legislature, in which the position of the

viceroy would be analagous to that of the king of England.

To this Sir Stafford replied that "were such a system to be introduced by convention under the existing circumstances, the nominated cabinet (nominated presumably by the major political organizations), responsible to no one but itself, could not be removed and would in fact constitute an absolute dictatorship of the minority. This suggestion would be rejected by all the minorities in India, since it would subject all of them to a permanent and autocratic majority in the cabinet. Nor would it be consistent with the pledges already given by H.M. government to protect the rights of these minorities . . . The proposals of H.M. government went as far as possible, short of a complete change in the constitution which is generally acknowledged as impracticable in the circumstances of the day." This was, of course, correct. The viceroy was responsible to the secretary of state and the British parliament, and could not divest himself of his powers without an act of parliament involving constitutional changes of a complicated and far-reaching character which were impracticable in the crisis of a great war.

On April 11 negotiations were broken off. But the offer still held. The prime minister stated in the house of commons that "the broad principles of the declaration made by H.M. government, which formed the basis of the mission of the lord privy seal to India, must be taken as representing the settled policy of the British crown and parliament. These principles stand in their full scope and integrity."

Congress Rebellion.-After this, the political situation rapidly deteriorated. On July 14 the Congress "high command" demanded the immediate abdication of British rule, though they were prepared to tolerate the presence of the troops of the United Nations as allies of a free India. This declaration was received by the other parties with dismay, and the government of India held its hand, hoping that wiser counsels would prevail. On Aug. 8, however, the All-India Congress committee endorsed the proceedings of the working committee, threatening to order mass civil disobedience in the event of noncompliance. This, in Mohandas K. Gandhi's own words, was nothing short of open rebellion. The viceroy's council, which now consisted of four British and seven Indians, had no alternative but to declare Congress an illegal association, and the members of the working committee were interned for the period of the war; Gandhi was arrested. In several cities serious disturbances broke out, the object of which was evidently to disrupt communications with the troops defending the Assam frontier. Railway stations and government offices were destroyed, telephone and telegraph wires cut, bridges damaged, and a number of government officials murdered. Order was not restored till the end of September, and military operations were gravely jeopardized. All other political parties dissociated themselves from the rising, which was mainly the work of agitators, and local in character.

India's War Effort.—Meanwhile, India as a whole was fully alive to its peril, and an army of 2,000,000 men, all volunteers and drawn from every class of the community, was enrolled. It was officered largely by Indians and constituted a truly national army, the largest volunteer force in history. No less remarkable was the war effort in other directions. India became the centre of the eastern supply group, supplying the munitions required, not only for itself but its Allies. In the early part of the North African campaign, it was solely responsible for the supply of pipe lines, rolling-stock and locomotives; even village industries were mobilized for making cotton cloth, blankets, camou-

flage netting and pith helmets. Hundreds of miles of pipe line for fuel were laid from Bengal to the Assam frontier; two hundred aerodromes were constructed, with bases for the American forces flying supplies over the "hump" to China. A network of roads and railway tracks was hacked out of the virgin jungle; 130 new hospitals were built and equipped with instruments and other appliances and drugs. The mills of Cawnpore and other places turned out immense quantities of uniforms and equipment, and all the supplies dropped over Burma were carried by Indianmade parachutes. Aircraft were assembled and supplied with accessories and spare parts at 18 centres. Government ordnance factories produced almost every kind of weapon required in modern warfare. Many types of craft required for coastal operations were built in Indian ports. The iron and steel works at Tatanagar and other places were working night and day.

All this meant the installation of new plants, the devising of new processes and the adaptation of old ones. Batches of skilled workmen were sent to England for training. This had an important influence upon the development of India's natural resources, the effect of which would be felt in the post-war years. The effect on the country's financial position was little short of revolutionary; against a debt of £350,000,000 in 1939, it held in Dec. 1945 sterling balances amounting to £811,000,000 and "balances held abroad" by the reserve bank, as security against deposits, of £416,000,000.

The tide of war was now beginning to turn in favour of the Allies. The great victories won by the U.S. navy at the Coral sea and Midway in May and June 1942 checked the Japanese advance in the Pacific, and Colonel Louis Johnson, President Roosevelt's personal envoy in India, announced the arrival of a huge convoy, including American troops and airmen, with up-to-date equipment and armaments. Preparations for taking the offensive went on steadily during 1943; meanwhile the Japanese menace to the Assam border was definitely arrested.

Lord Wavell Viceroy.-In Oct. 1943 Lord Linlithgow retired after holding office for seven and a half years; no viceroy since Lord Canning in 1857 had to face such a heavy load of responsibilities. He was succeeded by Field Marshal Lord Wavell, who had held the post of commander in chief, India, since March 1942. This experiment of appointing a serving soldier as viceroy was an unprecedented one; 40 years previously Lord Morley had vetoed the selection of Lord Kitchener. The departure of Lord Linlithgow synchronized with the outbreak of a disastrous famine in Bengal, the most serious since the beginning of the century. The primary cause was no doubt the cyclone of the previous year, which had destroyed the rice crop, drowned thousands of cattle, and put a large area temporarily out of cultivation. But there were subsidiary factors. The country had been denuded to feed the troops overseas, and Burma, the chief source of supply in peacetime, was now in Japanese hands. There were also grave errors of policy on the part of the local government, and a lack of co-ordination between the various provinces to secure an equitable distribution of food in times of scarcity. By December bands of starving peasants were invading Calcutta in search of food.

Lord Wavell took the matter promptly in hand, and with the co-operation of the military authorities food and medical supplies were rushed to the affected areas, where one of the worst obstacles was lack of communications. But it was impossible to prevent a terrible mortality, and 1,500,

ooo people died of hunger and epidemic disease. What was really needed, however, was a long-term policy to prevent a recurrence of the disaster. The real remedy was an all-round expansion of India's economic life, with special emphasis on the basic industries, agriculture, hydroelectric power and transport. With this end in view, Lord Wavell appointed Sir Ardeshir Dalal, a director of the Tata Steel Works, as the head of a new department of planning and development of the government of India.

It was recognized, however, that progress was impossible as long as the rate of literacy remained as low as 15% of the total population, and a post-war scheme to provide free and compulsory education for all children between 6 and 14 years, and secondary and university education for those able to benefit therefrom was worked out. A planned economy was essential in order to convert India from a land of undernourished peasants into a prosperous state, utilizing to the fullest capacity its vast material and human resources; but this was impossible as long as the best energies of the country were frittered away in sterile political controversy.

By the spring of 1944 the Allies were on the offensive on all fronts. The Indian troops in North Africa, side by side with their American, British and dominion comrades, took a leading part in driving the Italian and German forces out of Africa, and in the victorious Italian campaign which culminated in the surrender of the Germans at Caserta, April 29, 1945. The 14th army under General Slim, consisting of two British, three African and nine Indian divisions, fighting in the face of immense difficulties, drove the Japanese foot by foot out of Burma. Rangoon was retaken May 4, 1945. A general offensive by the South-East Asia Command under Admiral Lord Louis Mountbatten was forestalled by the Japanese surrender on Aug. 15. During World War II the Indian army had expanded from 189,000 with 1,115 Indian commissioned officers to 2,500,000 with 15,740 Indian officers. It had suffered 180,000 casualties (24,340 fatal) and had been awarded 31 Victoria Crosses.

The Royal Indian navy, Royal Indian air force and Women's auxiliary corps had rendered invaluable services. The Royal Indian navy had expanded from 1,200 to 30,000 men, and played a leading part in the evacuation of Burma, convoy duties and coastal operations. Its most notable exploit was that of the sloop "Bengal," armed with a twelve-pounder gun, which attacked two Japanese raiders armed with 5.5-in. guns, sank one and drove the other off. In 1942 the Royal Indian air force consisted of two squadrons. It ended the war with ten, the personnel being entirely Indian. They played a conspicuous part in the Burma campaign, dropping more than 1,000 tons of bombs on the Japanese forces, and large quantities of supplies by parachute for troops in the forward areas. The coastal defense wing did valuable work hunting for axis submarines and surface-raiders and on escort duties.

Post-War Situation.—After the time of his internment in the Aga Khan's palace at Poona, Gandhi carried on a correspondence with the viceroy, complaining of the injustice of the treatment meted out to himself and his colleagues. When it was pointed out that the disturbances of Aug. 1942 had involved grave consequences, he retorted that Congress was not responsible, or alternatively, that they were provoked by the "leonine violence" of the British government. Finally, he threatened to start another fast unless he and the members of the working committee were unconditionally released. This was the ninth occa-

sion on which Gandhi had resorted to this form of protest. But the viceroy stigmatized the threat as "political blackmail," and warned Gandhi that if he fasted, he alone would be responsible for the consequences. He was, however, willing to release him, provided that he dissociated himself from the resolution of Aug. 8, and the policy which that resolution represented. To this Gandhi was unable to agree and he announced that he would start a three weeks' fast on Feb. 10, 1943. Gandhi was now 73, and grave apprehensions were felt about his health. He was allowed to carry out his self-imposed penance at a friend's house, and the rule about visitors was relaxed Madheo Shrihari Aney, Chakravarthı R. Rajagopalacharı and other friends vainly tried to persuade him to abandon the project, and an appeal was made to Churchill. The fast was duly carried out, and ended on March 3. But Gandhi's health had suffered considerably, and he was unconditionally released in May 1944.

After this, events in the political field moved rapidly. It was recognized on all sides that no advance was possible without a Hindu-Moslem entente, and in September, by the good offices of Rajagopalachari a meeting in Bombay was arranged between Gandhi and Jinnah. Gandhi proposed that the Hindus and Moslems should unite to achieve independence, after which boundaries between the two Indias could be adjusted by mutual agreement. Jinnah replied that this was putting the cart before the horse; Pakistan must first be conceded. A nonparty conciliation committee called by the veteran liberal leader, Sir Tej Bahadur Sapru, did not fare much better. The report of the committee, which was published in April 1945, proposed that India should be declared a dominion by royal proclamation. The viceroy's council should be Indianized, and dyarchy at the centre abolished. An Indian federation should be set up without insisting on the accession of the states, but secession on the part of the provinces of British India should not be permitted. Political prisoners should be released, and parliamentary government restored in the provinces. A constitution-making body consisting of equal numbers of Hindus and Moslems should be set up.

The report, admirable in all respects, had a cool reception, and it was obvious that there was little prospect that its suggestions would be adopted. The next move lay with the government, and on March 25 Lord Wavell flew home for consultations with the cabinet. On June 14 a statement of policy was made in the house of commons by the secretary of state for India, L. S. Amery. He said that if the offer made by the British government were accepted all the portfolios on the viceroy's executive council except that of the war member, held by the Commander in Chief, would be transferred to Indian hands; this would include that of foreign affairs, hitherto held by the viceroy in person. In selecting his council, the viceroy would endeavour to secure a balanced representation of the main communities, including an equal proportion of Moslems and Hindus. The new executive would thus be representative of organized political opinion. If these proposals were agreed to, ministerial government would be resumed in the provinces and the members of the Congress Working committee who had been interned in August 1942 were to be released.

On his return, Lord Wavell called a round table conference at Simla on June 26, and the leaders of the various political groups were asked to submit lists from which he could choose the members of his executive council. The conference eventually broke down because Jinnah refused to submit a list of nominees without a guarantee that all Moslems selected should be members of the Moslem



File of native women workers at a U.S. airbase in India where, in 1944, they helped to enlarge the field to accommodate B-29 Superfortresses

league. On Aug. 25 Lord Wavell again went to London to consult with the new secretary of state for India, Lord Pethick-Lawrence, and the Labour government. On Dec. 4 Lord Pethick-Lawrence made a statement reaffirming the intention of the British government to promote with all possible urgency the attainment by India of the position of an independent partner in the commonwealth. After the elections the viceroy would discuss with representatives of the Indian legislatures and the states the appropriate methods to be followed in convening the constitution-making body. Responsible government in the provinces would be resumed, and the viceroy would take steps to bring into existence an executive council which would have the support of the main Indian parties.

The closing months of 1945 were marked by a growing impatience which manifested itself in widespread disturbances. Great excitement was caused by the court martial of members of the Japanese-sponsored "Indian national army" accused of the mal-treatment of sepoys who refused to go over to their side in Burma. Congress leaders maintained that they were national heroes, fighting for the freedom of India, and mass meetings were held to insist that they should not be punished. In Bombay and Calcutta this led to demonstrations in which shops were looted and Europeans attacked, and army lorries overturned and set on fire. An American soldier was killed by the mob. On Feb. 18, 1946, a mutiny broke out among units of the Royal Indian navy stationed at Bombay, Karachi and Calcutta. These events took place against a grim

background of famine in south India. India's shortage of lood grains was estimated at 7,700,000 short tons for 1946.

The elections for the central and provincial legislatures, the first held after Congress withdrew its ministries in 1939, were scheduled for the spring; these were of unusual importance, as upon the latter would devolve the task of choosing the members of the constitution-making body. The results in both were what was anticipated. Minor parties such as the Mahasabha were practically eliminated. In the provinces, Congress obtained majorities as before in 8 out of the 11, but with greatly increased numbers; they won 930 seats out of a total of 1,585, as compared with 704 in 1937, while the Moslem league won 428 Moslem seats as compared with 109 in 1937. In the central assembly Congress won 56 and the Moslem league 30 seats. In Bombay Congress captured 126 seats out of 175, and in the central provinces 92 out of 112. In the Punjab the Moslem league won 75 seats out of 175, Congress 51 seats, the Akali Sikhs 22, and Unionists and Independents 27; thus though the league was the strongest single party it was liable to be outvoted by a coalition of the other parties. In the central legislature the league won all the seats reserved for Moslems, and an overwhelming majority of Moslem seats in the provinces, except in the case of the North-West Frontier Province, which had always been pro-Congress. Thus Moslem opinion was solidly behind the league, and this constituted a mandate for Pakistan.

The Cabinet Mission.—Further efforts on the part of the viceroy to break down the deadlock having proved unavailing, it was announced that the government would send out a cabinet mission, consisting of Lord Pethick-

Lawrence, A. V. Alexander and Sir Stafford Cripps, in an endeavour to bring about such a measure of agreement between the Indian communities as would enable Indians to frame a constitution for themselves. Its functions were purely advisory. Having secured the necessary measure of agreement, it would retire, leaving the future in Indian hands.

The first discussions hinged on Pakistan, and, though the mission succeeded in bringing Jinnah and the Congress leaders together, no agreement was arrived at. The mission was therefore forced, on May 16, to issue proposals of its own, though these were in no sense an award. An interim government was to be set up at the centre, in which all portfolios, including that of war, would be held by Indians. A constitution-making body was then to be assembled which would draw up an Indian union, comprising British India and the states. Pakistan was rejected as incompatible with the defense of the country as well as on economic and administrative grounds, but the centre was to be a minimal one: it would be limited to defense, foreign affairs and communications, the union having the powers to raise the revenues necessary for these subjects. All residuary powers would be vested with the provinces, and it was further laid down that the provinces would have the additional right to form groups, with their own executives and legislatures, each group to determine the provincial subjects to be taken in common. Contiguous provinces such as the Punjab, Sind and the North-West Frontier Province in the northwest, and Assam and Bengal in the northeast, could thus form themselves into autonomous groups of states; by this ingenious device it was hoped to preserve the unity of India while ensuring for the Moslems the substance of Pakistan. Moreover, the rights of the minorities were safeguarded. The Indian states would retain all rights and powers other than those ceded to the union. Matters arising out of the transfer of power would be dealt with by a treaty negotiated between the United Kingdom and the constituent assembly.

The mission returned to England on June 29. It had succeeded in obtaining the agreement of Congress and the league to a long-term plan for a constitution based on three separate groups of provinces with a minimal centre; but it had failed to secure the concurrence of the two political parties to an interim government, and the viceroy was compelled to set up a stop-gap executive council composed of eight officials, six British and two Indian.

Constituent Assembly.—On July 25, 1946, results of the elections to the constituent assembly were announced. Out of a total of 210 seats allotted to general constituencies the Congress party won 201, while the Moslem league captured 73 out of the 78 Moslem seats, the remaining five going to prominent Congress Moslems. The four Sikh seats remained for the time unfilled, owing to the boycott of the elections by that community, but 25 representatives of the depressed class, 7 Christians, 3 Anglo-Indians and 12 women were included in the majority, and in addition a number of eminent nonparty men were elected. Ninety-three seats remained to be filled by the Indian states, but it was plain that Congress would dominate the assembly whatever happened.

Nehru told a press conference that "what we do there, we are entirely and absolutely free to determine; we have committed ourselves on no single matter to anybody." As regards the grouping of the provinces, which the Moslems considered vital to their interests, he predicted that the North-West Frontier Province would refuse to be grouped



"What a Time to Cast Off!" Shoemaker of the Chicago Daily News was skeptical of the timing in Prime Minister Attlee's offer of Indian independence, made in the house of commons on March 15, 1946

with the Punjab, and Assam would decline to throw in its lot with Bengal. These utterances Jinnah characterized as "a complete repudiation of the basic form on which the long-term scheme rested."

On July 29 the Moslem league formally reversed its decision of June 6, accepting the cabinet mission's long-term plan. In the light of the fact that no checks save "the secretary of state's pious hope" existed to prevent the constituent assembly from taking by brute force majority decisions repugnant to the letter and spirit of the scheme, the resolution stated that conditions precedent for the successful working of a constitution-making body did not exist. It therefore demanded the rejection of the plan and the adoption of direct action. Aug. 16 was proclaimed as "direct action day." In most Indian cities it passed off quietly, but in Calcutta it was the signal for a battle royal between the contending factions, which raged for four days before it was taken in hand by the police and military; 3,500 people were killed, while looting and arson were widespread; the damage done to property was estimated at more than £1,000,000.

Interim Government.—On Aug. 25, 1946, the viceroy announced the names of the new interim government. They included Nehru, Sardar Vallabhai Patel and Rajagopalachari and two other prominent Congress men, representatives of the Sikhs, Christians and depressed classes, three Moslems and a Parsee. At the same time Lord Wavell broadcast a message in which he stated that, as soon as the league agreed to co-operate, five seats, which would ensure complete parity with the caste Hindus among the Congress party-representatives, would be placed at Jinnah's disposal. He added that the Moslem league need have no fear that it would be outvoted on any essential; he would make it his business to see that the most important portfolios were equitably shared.

The new government with Nehru as chief minister, assumed office on Sept. 1 and held its first formal meeting

under the presidency of the viceroy at Delhi four days later. The tasks confronting it were heavy. First and foremost, there was the question of communal accord, which could only be achieved by coming to terms with the Moslem league on the subject of representation in the central government; secondly, the need for energetic measures for averting the threatened famine; thirdly, the settlement of the 2,000,000 demobilized soldiers in civilian occupations; and lastly, steps to combat the growth of communist agitation among the unskilled labouring classes.

Nehru, in his first broadcast from Delhi as chief minister of India's interim government, declared that the Indian Congress party would go to the constituent assembly determined to find a common basis of agreement on all common issues. He invited those who differed from Congress to enter the assembly as equals and partners. An urgent and vital task was to conquer the spirit of discord which was abroad in India; out of mutual conflict they would never build the house of India's freedom.

Turning to foreign policy, Nehru said that an independent India would have friendly and co-operative relations with Great Britain and the nations of the British commonwealth, but it was well to remember what was taking place in one part of the commonwealth: in South Africa racialism was a state doctrine, and the Indian people were putting up a heroic struggle against the tyranny of a racial minority. The future was bound to see a closer union between India and southeast Asia on the one hand, and Afghanistan, Iran and the Arab world on the other. India would take part in international conferences as a free nation and not as a satellite power.

On Oct. 5, by the good offices of the nawab of Bhopal, chancellor of the chamber of princes, a meeting was arranged between Jinnah and Nehru, and ten days later it was announced that the viceroy's offer had been accepted by the league. Three members of the cabinet resigned to make way for the newcomers, who included Liaquat Ali Khan, Jinnah's right-hand man. Surprisingly one of the league nominees was Jogendra Nath Mandal, the Bengal depressed classes leader. It was announced at the same

Followers of Subhas Chandra Bose, organizer for Japan of an Indian National army, in armed conflict with Bombay police during festivities honouring Bose's birthday in Jan. 1946. Anti-British rioting and violence continued for three days

time that Acharya Kirpalani succeeded Nehru as president of the Indian National congress.

The opening of the constituent assembly was fixed for Dec. 9, but a fresh difficulty arose over the interpretation of the cabinet mission's plan for forming India into legislative groups. The Moslem league insisted that the group should vote on the subject as a whole, while the Congress party contended that each province should vote separately whether it should or should not enter a group. The latter view, if upheld, would completely disrupt the plan, for while the Moslems hold an over-all majority in North-West and North-East India, they do not enjoy a majority in each individual province. Jinnah announced that unless the former view were upheld the Moslem league would boycott the constituent assembly. A conference of the Moslem league and Congress leaders and the viceroy with the British cabinet was called to London in a last-minute attempt to save the situation. It was fruitless, and the members separated on Dec. 6 without reaching a conclusion. The constituent assembly opened three days later without the presence of representatives of the Moslem league or the Indian states. Nehru announced that the object of the assembly would be to establish a sovereign Indian republic. (See also Burma; Famines; World War II.)

The Indian States.—The question of the repercussions of the above described events upon the position of the Indian states was an important and interesting one. Within their borders, the larger states exercised sovereign powers. But they had no external existence; they could not wage war or make treaties or engagements with their neighbours. In return, the crown undertook to maintain their territorial integrity, protect them from external aggression and internal disturbances, and maintain the dynasty and continuation of the rights and privileges of the rulers.

The idea of a federal India had been adumbrated in the report of the Simon commission, and had been cautiously welcomed by the then chancellor, the maharaja of Bikanir, though the Butler commission expressed the opinion that, in view of the historic relation between the paramount power and the princes, the latter should not be transferred without their agreement to a relationship with

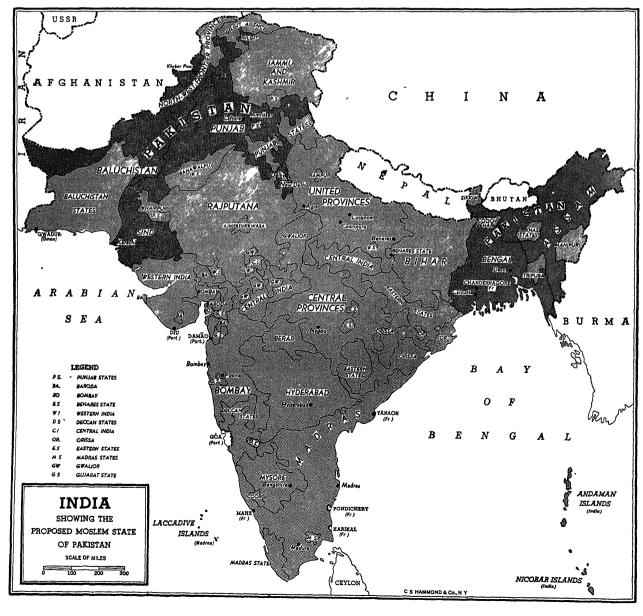


a new government in India responsible to an Indian legislature. A federal India constituted on these lines was an integral part of the Government of India act, 1935. The states were to nominate 125 out of the 375 members of the legislative assembly, and 104 out of 206 members of the council of state. It was laid down that the federal part of the act was not to come into force until the rulers of half the total population of the states had signed the instrument of accession. As mentioned above, this never took place. In some states, serious trouble had arisen from agitation fomented by members of the Indian National Congress, and the requisite number of princes were unable to agree to the diminution of their powers which would necessarily be involved. Indian nationalists, on the other hand, raised objections to a scheme which would place the casting vote in the hands of "palace nominees." This was the state of affairs when war broke out, and the federal portion of the act was suspended.

In World War II, as in World War I, the Indian princes placed the whole of their resources in men and money at the service of the king emperor, and many of them went to

the front. The states' subjects under arms numbered 250,000, and 16 battalions of the states forces were on active service, as well as many transport, signal and pioneer companies. The nizam of Hyderabad, the premier Indian state, raised and equipped 8,000 men, gave £170,000 for a corvette for the Royal Indian Navy, and a further large sum for an R.A.F. bomber flight. Other states followed his example.

It was obvious that if the princes were to survive, it could only be as constitutional rulers. Progressive princes realized that the association of their subjects in the government through parliamentary and local bodies was imperative, and Travancore, Mysore, Cochin and Baroda introduced effective representative institutions, an independent judiciary and the separation of the privy purse of the ruler from the expenditure of the state. Another question to be considered was that of grouping. There were 562 states in India, ranging in size from Hyderabad and Kashmir, as large as Great Britain, to tiny holdings of a few square miles. It was proposed in 1943 to group the latter into larger units, but legal difficulties intervened. Sooner or later, however, something would have to be done. Without the pooling of resources, they would be



unable to face the problems of modern administration; the duplication of administrative machinery involved a large and unnecessary waste of money.

The Cripps offer of 1942, which envisaged the framing of an Indian constitution by Indians themselves, necessarily involved the question of paramountcy. If India decided to leave the British commonwealth. paramountcy would automatically disappear. In a memorandum presented to the nawab of Bhopal, chancellor of the chamber of princes, by the cabinet mission, it was stated that no change in the relationship of the states with the crown or the rights guaranteed by their treaties would be initiated without their consent. Paramountcy would be continued during the interim period, and would in no circumstances be transferred to an Indian government. During period the states would conduct negotiations with British India in regard to the future regulation of matters of common concern. When a new, fully

self-governing or independent government came into being in British India, the British government's influence would not be such as to enable them to carry out the obligations of paramountcy. All the rights surrendered by the states to the paramount power would return to the states. The void would have to be filled either by the states entering into federal relationship with the successor government, or failing that, entering into particular political arrangements with it. On behalf of the standing committee of the chamber of princes, the nawab of Bhopal welcomed the proposals as providing the necessary machinery for the attainment of independence. A negotiating committee as envisaged by the mission would be set up at the viceroy's invitation, and would consist of three princes and seven state ministers. It was provided that 90 seats on the constituent assembly should be allotted to the states, but the manner of their selection was not settled.

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Indiana

A north central state, Indiana was admitted to the union Dec. 11, 1816, as the 19th state; popular name

		Statistical Data	204	_
item	1938 Value (000's omitted)	Amount or Number	Value (000's omitted)	Amount or Number
Exchange rate		1 Indian Rupee =1 s. 6 d. (36.6c)	•	1 Indian Rupee =1 s. 6 d. (30.1c)
Finance Government revenues	£91,671 (\$448,179) £91,671 (\$448,179) £33,239 (\$162,505) £895,801 (\$4,380,465)		£98,826 (\$378,503) £98,826 (\$378,503) £34,966 (\$133,918) £941,395 (\$3,605,543)	
Transportation Railroads		41,076 mi. 285,313 mi.		40,477 mi.*
Telephones		101,054 mi.		105,349* 104,286 mi.*
Coal		31,935,836 tons 1,084,072 " 1,745,254 " 321,138 oz. 2,488,000 bbl.		
Rice		29,906,240 tons 12,055,680 " 6,051,360 " 3,921,120 "		24,853,920 tons† 11,205,600 " † 6,503,840 " † 4,146,240 " †
Livestock Cattle		160,511,000 51,159,000 44,916,000 41,964,000		130,757,765‡ 49,717,044‡ 35,760,493‡ 45,107,062‡
Exports—total	£135,414 (\$662,038) £21,763 (\$106,401) £21,728 (\$106,226) £18,252 (\$89,236) £11,017 (\$53,860)	546,000 tons 167,000 " 837,000 "	£160,555 (\$614,924) £38,360 (\$146,919) £23,705 (\$90,791) £20,712 (\$79,326) £15,615 (\$59,807)	590,000 tons 180,000 " 638,000 "
Imports—total	£130,072 (\$635,924) £20,719 (\$101,295) £13,996 (\$68,426) £12,839 (\$62,768) £10,022 (\$49,008)	151,000 " § 491,000 "	£130,133 (\$498,408) £17,402 (\$66,649) £14,679 (\$56,221) £11,545 (\$44,216) £8,558 (\$32,779)	94,000 " § 371,000 "
Defense Standing army personnel Standing navy personnel Standing air force personnel Military expenditures	£32,947 (\$161,078)	 120	£35,674 (\$136,632)	248,963 1,355 1,500
Education Primary schools Students Secondary schools Students Unrecognized institutions Students Universities Students		10,870,045¶ 2,505,028¶ 19,354¶ 18¶ 140,461¶		187,164 11,797,849 14,711 2,751,239 18,862 590,567 15 114,104
*1942. †1941. ‡Exclusive of United Provinces and §Tonnage for raw cotton only	Orissa.	Excludes Bu ¶1939. 9Total recogn	rma. nized institutions: 211,192.	

"Hoosier." The total area of the state is 36,519 sq.mi., including 314 sq.mi. of water. Pop. in 1940 was 3,427,796; of which 55.1% was urban and 44.9% was rural. Of the total, 93.2% were native white, 3.2% foreign-born white and 3.6% Negro. Est. population in 1945 was 3,743,328. Capital and largest city, Indianapolis, had a population (1940) of 386,972. Other cities: Fort Wayne (118,410); Gary (111,719); South Bend (101,268); Evansville (97,062); Hammond (70,184); Terre Haute (62,693); East Chicago (54,637); Muncie (49,720); Anderson (41,572).

In 1937, under Gov. M. Clifford Townsend, Democrat, departments of public welfare were established for both the state and the counties, with personnel selected by the merit system. The state distribution to public school teachers, also, was increased to \$700 annually for each teaching unit. A federal homestead settlement at Decatur and a federal housing project for Negroes in Indianapolis were completed during the year, and with federal government co-operation old-age pensions were initiated, unemployment compensation was provided for and other public welfare and social security measures were effected.

In the Nov. 1938 election the Republicans won a majority (51 out of 100) in the house; the Democratic party retained control of the senate. Control of the 81st general assembly was divided. All state officials and judges elected were Democrats except for the secretary of state, a post won by James M. Tucker, Republican. Seven of the 12 U.S. representatives elected, however, were Republican. Politically significant, also, was the opening of the cam-

paign of former governor Paul V. McNutt, high commissioner of the Philippine Islands, for the Democratic nomination for president of the United States in 1940.

In 1939, the general assembly met from Jan. 5 to March 6; principal legislation passed and approved during the year was the revision of the liquor laws (abolishing ports-of-entry and their import fees).

In the Nov. 1940 election, Wendell L. Willkie, native-born Republican candidate for president, carried the state by a vote of 899,466 to 874,063. Henry F. Schricker, Democrat, was elected governor by a vote of 889,620 to 885,657. Other elected officials, all Republican, were: Charles M. Dawson, lieutenant governor; James M. Tucker, secretary of state; Richard T. James, auditor; James M. Givens, treasurer; Clement T. Malan, superintendent of public instruction. The Republican party secured a majority in the senate and added to its majority in the house of representatives; one Republican was elected to the supreme court and two to the appellate court, although both courts retained Democratic majorities. Raymond E. Willis (Rep.), was elected to the seat in the U.S. senate held by Sherman Minton (Dem).

In 1941, the major political development was the struggle between the Republican controlled general assembly, in session from Jan. 9 to March 10, and Democratic Gov. Henry F. Schricker, for the control of the state government and the appointment of state personnel. The assembly repealed the executive-administrative act of 1933 which granted the governor complete appointive power, and gave him centralized authority on many other matters. It passed bills over the governor's veto, establishing boards made up of the governor and two (Rep.) elected officials with appointive and administrative authority over the various administrative offices and institutions of the state. Gov. Schricker sought and obtained a judicial injunction against further action by these boards, and after much litigation the state supreme court declared most of the legislation unconstitutional and reaffirmed the appointive authority of the governor. In the exercise of this authority Gov. Schricker gave consideration to recommendations of heads of state institutions and, for political appointments, to the recommendations of the Democratic state committee -the general practice before the system of highly centralized authority was established in 1933. On March 8, 1941, the state personnel act became a law, without the governor's approval, providing for a merit system in the department of public welfare, the state institutions, the state board of health and several other agencies.

In the Nov. 1942 elections, the following state officers, all Republicans, were elected: Rue Alexander, secretary of state; Richard T. James, auditor; James M. Givens, treasurer; C. T. Malan, superintendent of public instruction. Republicans also gained one seat on the supreme court, four on the appellate court and the office of the attorney general. The supreme court for 1943 was to include 3 Democrats and 2 Republicans, the appellate court would be wholly Republican. For the general assembly, 82 Republicans and 10 Democrats were elected to the house and 23 Republicans and 5 Democrats were elected to the senate. For congress the state elected 9 Republicans and 2 Democrats, and the state lost one representative under the apportionment law based on the 1940 census.

The 83rd general assembly was in session from Jan. 7 to March 8, 1943. A law identical with one passed by the Kentucky legislative body and later enacted by congress

defined the state boundary along the Ohio river so that it would include in Indiana the site of the Evansville water works, which Kentucky had claimed and against which it had levied taxes. Twelve interim commissions were established to codify laws, investigate conditions and locate institutions. An important act passed during the year was that fixing financial responsibility for operators of motor vehicles. Improvements were made in the investment of the common school fund, and needed regulation was instituted covering nursing homes for the aged, many of which sprang up after the establishment of oldage pensions; they were required to obtain licences and comply with reasonable specifications. The state personnel board, which placed many of the state departments and institutions on a merit system, was abolished and an almost identical act re-enacted with the object of changing the membership of the board-the board had been at odds with many state officers and institutions. (C. B. C.; X.)

State officers elected in 1944 were: Ralph F. Gates, governor; Richard T. James, lieutenant governor; Rue J. Alexander, secretary of state; A. V. Burch, auditor; James A. Emmert, attorney general; Clement T. Malan, superintendent of public instruction. Two special sessions of the 83rd general assembly were held during 1944. The first, April 11-14, amended the election laws to facilitate voting by the armed services. The second, held on Nov. 4, extended the voting hours at the polls. After the death of Frederick Van Nuys, Republican, Samuel D. Jackson, Democrat, was appointed U.S. senator and served from Jan. 28 until the election in November of William Jenner (Rep.) who served until the end of the session. Homer E. Capehart (Rep.) was elected for a four-year term. In the 1944 presidential election Thomas E. Dewey received 875,-891 votes and Pres. Roosevelt received 781,403.

The 84th general assembly met in regular session from Jan. 4 to March 5, 1945. It made provision for a flood control commission, a veterans' affairs commission, an aeronautics commission, the establishment of the Northern Indiana hospital for treatment of mental disorders and appropriation for additional buildings on the site of the Indiana War memorial for use as national headquarters of the American Legion; it also established a public employees' retirement fund.

Indiana	Statistical Data
Table I —	Education (public)

				1938	1941	1942	1943	1945				
Elementary pupils . High school pupils .				503,397 186,260	459,434 196.795	461,968 192,1 <i>47</i>	464,190 183,189	456,770 168,817				
Elementary teachers				13,127	11,844	11,608	11,844	11,579				
High school teachers	•	•	٠	8,052	8,946	9,052	8,946	8,637				
Table II — Public Welfare												

(All money figures in thousands of dollars)

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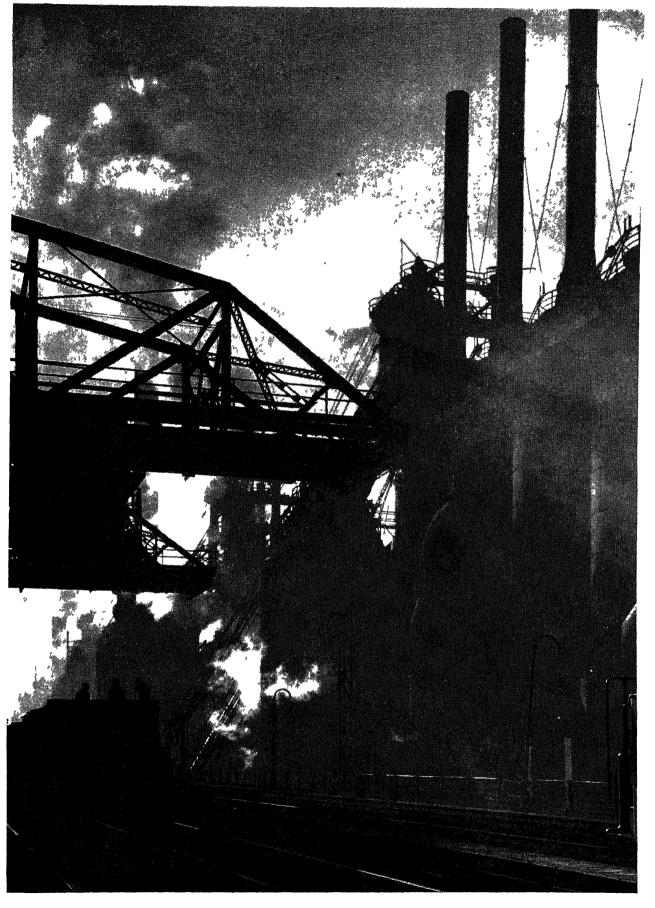
1037

	.,,,,	1750	1737	1740	17741
Cases on general relief Cost of general relief Recipients of old-age pensions Cost of old-age pensions Workers under unemployment	52,943 \$820	57,679 \$807 53,842 \$890	45,933 \$552	41,635 \$549 66,255 \$1,193	23,484 \$1,245 67,236 \$1,245
compensation		530,651 32,000 2,475	538,942	594,900 35,736 2,439	35,108 2,369

Table III.—Communications (Money figures in thousands of dollars)

1938 1939 1941 1942 Highway mileage 10,994 9,841 10,155 10,210 10,288 10,431 Expenditure on highways . . \$21,532 \$22,673 \$20,792 \$28,069 \$25,603 \$18,404 \$19,475 mileage 6.939 6,917 6.899 6.928 6,928 8,289

One of 12 blast furnaces at the Carnegie-Illinois Steel mills in Gary, Ind., largest of its kind in the world, which operated at capacity to meet Allied needs during World War II



Indiana Statistical Data (continued)															
Table IV.—Banking and Finance															
(Money figures in thousands of dollars)															
State revenue Number of bar Number of na	ıks	,332 \$10 530	9,144 \$1 521	22,284 512	\$100,514 507	\$103,577	\$170,254 500								
tional bank	s .	126	127	125	124	124	121								
Deposits of na tional banks	- 5 • \$444,	,254 \$47	2,251 \$5	17,272	\$567,868	\$592,846	\$707,609								
Table V.—Agriculture															
	(All figures in thousands)														
	1937	1939	1940	1942	1943	1944	1945 (est)								
Leading crops															
(bu) Corn Hay (short	213,840	213,416	145,669	216,70	2 210,40	5 176,244	243,376								
(tons) . Oats	2,255 45,105	2,716 25,225	49,950	53,42	8 33,21	2 31,400	62,092								
Potatoes . Rye Soybeans .	5,400 1,788 5,797	4,560 1,608 14,430	1,785	1,94	4 1,41	3 1,080	1,330								
Wheat	34,718	27,612													

Table VI --- Manufacturing (Money figures in thousands of dollars)

	1935	1937	1939
Wage earners	248,196	313,342	277,467
Wages paid	\$257,802	\$402,117	\$345,475
Value of products	\$1,649,530	\$2,497,548	\$2,227,648

Table VII --- Mineral Production (All flaures in thousands of dollars)

						1.	-11	"	,,,	a 3	***	****	Josailas OI	dollarsi		
													1937	1938	1939	1940
Total value o				uc	s								\$54,887	\$47,892	\$53,423	
Leading proc	ŧυ	cts														
iron, pig						٠							<i>77,</i> 991	37,026	68,165	\$97,408
Coke .													32,655	18,278	28,533	•
Coal													28,601	23,968	24.642	
Stone .													6,398	6,487	7,470	5.822
Clay													4.736	4,120	5,709	•
Sand and	gı	rav	el										3.228	2.958	3,388	
Petroleum	•	•	•	٠		٠	٠	٠	•		·	•	1,140	1,260	1,675	

Elected officers of the state in 1946 were Ralph F. Gates, governor; Richard T. James, lieutenant governor; Rue J. Alexander, secretary of state; Frank T. Millis, treasurer, Alvin V. Burch, auditor, James A. Emmert, attorney general; Clement T. Malan, superintendent of public instruction. They were all Republicans. (M. H. A.; X.)

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Indians, American

The Indian Reorganization (Wheeler-Howard) act of 1934 had provided the machinery by which political and economic self-government might be restored to the Indian tribes of the United States. The act, which was extended to cover the natives of Alaska and in part to Indians in Oklahoma in 1936, contained a provision specifying that it would not apply to any reservation wherein a majority of the adult Indians voted against its application. Of approximately 300 recognized tribes, bands, or pueblos within the continental U.S., 181 voted to avail themselves of the advantages of the act, which was applied to 14 additional groups who did not hold elections to vote on its application. Ninety-two groups, representing 128,-750 Indians, had adopted constitutions by 1946, and 72 had completed organization by ratifying charters permitting them to operate as business corporations. Seventyseven groups representing 86,365 Indians, of which about half belonged to the Navaho tribe (45,000 in 1934), rejected the act.

The tribal constitutions took many forms. Some were

adaptations of earlier organizations. Some merged the old and new forms to provide for a modern council and at the same time invested the chieftains with some power Others were organized much like a rural U.S. town. Under the charters the tribe was competent to make contracts, sign documents with its corporate seal, sue and be sued in courts of competent jurisdiction, purchase, take by gift, bequest or otherwise, or hold, manage, operate and dispose of property of every description, real and personal, including the power to purchase restricted Indian lands, and to issue in exchange therefor interest in corporate property. This exercise of corporate authority was limited by specific prohibition against any sale, mortgage or lease, for more than ten years, of any land within the reservation boundaries. These constitutions, by-laws and charters did not interfere with the pursuit by members of their own private objectives except in such ways and to such an extent as the members themselves had agreed. They did not affect allotment rights. The tribal council could deal only with the property of the tribe as a whole, not that of individual members. During the first decade of operation under these instruments, many of the council actions were subject to review or veto by the secretary of the interior. Many of the documents, however, carried specific provisions permitting the restriction or termination of secretarial supervision by action of the tribe or of the secretary of the interior, at the expiration of specified training periods.

The Indian Reorganization act provided a number of advantages which might be shared by organized tribes, such as access to a federal loan fund established by the act (\$10,000,000 authorized; \$6,599,600 appropriated); educational loans to permit qualified young Indians to pursue higher education; the restoration of much ceded land to the tribes; and the purchase of new lands for Indian tribes through the use of either federal or tribal funds. The act also reversed the 50-year-old policy of allotting Indian lands to individuals and stopped the sale of individual Indian lands, except in extreme emergencies. Under the credit provisions, loans were made to Indian tribes which in turn set up loan boards authorized to loan to individual members and to organized groups within the tribe.

The operations of the act served to arouse the initiative of many tribes which had sunk into apathy under previous governmental controls. While federal trusteeship of Indian lands was not terminated, and the responsibility for many phases of reservation administration was still vested by law in the reservation superintendent and his associates, increasing responsibility for administration of tribal assets was being shared by these officials with elected representatives of the tribes.

Efforts to Preserve Land Titles.-Where the operation of inheritance laws resulted in the fractionalization of Indian allotments, tribal councils made various proposals by which these fractionated acreages could be acquired by the tribe, rather than sold to non-Indians. This tribal land was consolidated and assigned to landless Indians, subject to cancellation for nonuse. Fear that these proposals only disguised a new attempt to divest Indians of their land delayed acceptance by individual Indians. After 1940, steps toward solution of the land problem moved more rapidly. All of the Jicarilla Apaches returned their allotments to the tribe in exchange for assignments. Progress was made among the Rosebud Sioux in the transfer of fractionated allotments to the tribe in exchange for certificates which could be used to obtain integrated assignments. Action began on the Colorado River reservation



Choctaw delegate from Oklahoma shaking hands with Pres. Truman, who had just approved the bill creating a commission to hear Indian land claims. The bill was signed on Aug. 13, 1946

looking toward the same solution.

Under authority of the act, the secretary of the interior returned substantial acreages of ceded lands to the Colorado River tribes in Arizona, the Wind River Shoshone tribe in Wyoming, the Consolidated Ute tribes in Colorado, the Umatillas in Oregon, the Blackfeet and Flathead tribes in Montana, the Fort Berthold and Standing Rock Indians in North Dakota, the Pine Ridge, Rosebud and Chéyenne River tribes in South Dakota, the Uintah and Ouray tribes in Utah, the Kiowa, Comanche and Apache tribes in Oklahoma, and a few others.

Many chartered tribes undertook the commercial development of their resources to provide employment, utilizing the proceeds for the further development of tribal property. For example, the Consolidated Kootenai (Kootenay) and Salish tribes of the Flathead reservation in Montana planned to invest almost \$500,000 derived from tribal electric power in the development of medicinal hot springs. The Blackfeet Indians of Montana began to loan the income from tribal oil leases to individual members of the tribe for the acquisition of livestock. The Metlakatla Indians in southeast Alaska used the income from a tribal cannery to develop hydroelectric power and other public improvements.

Claims Commission Authorized.—One of the basic problems recognized by the U.S. Indian service was that of Indian claims. Through the years, many injustices had been worked against Indian tribes through the failure of the federal government to carry out agreements arrived at through negotiated treaties. Between 1820 and 1850, most of the eastern Indian tribes had been removed from their aboriginal homes to new areas west of the Mississippi to which they were guaranteed permanent title. In many instances, they were transferred a second time until a majority were concentrated within the boundaries of the state of Oklahoma. The western tribes were persuaded to confine their activities to portions of their former ranges, which were then reserved for their exclusive use. In connection with these various removals and the establishment of reserves, the rights of many tribes were ignored or there were serious delays in complying with agreements. As examples:

- (1) During the forty-niners' gold rush to California, the Indians were driven from the valleys and dispossessed of their lands. Some 18 California tribes entered into treaties with representatives of the federal government for the sale or exchange of lands. These treaties were never ratified by the senate, and the claims dragged through the years.
- (2) When the Sioux Indians of the Dakotas stopped raiding the immigrant trains, they were promised a reservation area incorporating most of the state of South Dakota, including the Black Hills. Almost before the ink on the treaty was dry, gold was discovered in the Black Hills and the rights of the Indians were violated by white men who rushed to the scene. The Sioux Indians claimed

compensation for the loss of the Black Hills.

(3) When the Klamath reservation was set aside, part of the timber lands were sold to whites as the result of a surveyor's mistake in fixing the boundary.

A long and complicated process heretofore had faced any Indian group desiring to have its claims adjudicated. It was first necessary to obtain the passage of a jurisdictional bill by congress permitting the tribe to file suit in the court of claims against the federal government and specifying the general bases of the suit. Frequently when the cases came to trial, the jurisdictional acts were found to be inadequate, and an entire case might have to be started over again.

Despite these difficulties, the decade 1937-46 saw a number of substantial claims suits decided in favour of the Indians. In 1937, the court of claims awarded \$5,468,209.48 to the Klamath Indians in Oregon because of the erroneous boundary survey. In the same year, the court awarded the Wind River Shoshone a judgment in the amount of \$4,494,906.41, because the army in 1878 had settled a group of Northern Arapahoe on the eastern end of their reservation in Wyoming without consulting the Shoshones. In 1944, a suit of the California Indians resulted in a judgment awarding certain of these Indians \$5,024,842.34.

Unsettled claims, however, continued to cause unrest among the Indians. In a report to the house of representatives on Dec. 23, 1944, a select committee of the house committee on Indian affairs made a proposal that an Indian claims commission be established by congress and empowered to settle all the disputes. A bill to create an Indian claims commission and to provide for the powers, duties and functions thereof was enacted by congress and signed by President Truman on Aug. 13, 1946.

Inter-American Indian Institute.-On April 24, 1940, representatives of 19 of the 21 American republics met at Patzcuaro, Mexico, for the first Inter-American Conference on Indian Life. Canada was the only nation with an appreciable Indian population which was not represented. Consideration was given to the social, political, educational and physical welfare of the 30,000,000 Indian inhabitants of the western hemisphere. The conference recommended establishment of a permanent Inter-American Indian institute, and recommended that its permanent headquarters be in Mexico City. It also recommended the establishment of national Indian institutes in the affiliated nations. The convention came into force during Oct. 1941, after ratification by Mexico, Honduras, El Salvador, the U.S. and Ecuador. Bolivia, Colombia, Nicaragua, Panamá and the Dominican Republic later adhered to the convention. Ratification by the U.S. automatically provided for the establishment of a National Indian institute, financed during its first two years by funds provided through the Office of the Coordinator of Inter-American Affairs. On July 1, 1944, the institute lapsed through failure by congress to provide funds for its continuance. By order of Secretary of the Interior Ickes in 1945, the National Indian institute was transferred to the Institute of Ethnic Affairs, a private agency organized to promote on an international scale the interests of minority groups.

Native Land Rights in Alaska.—Although the department of the interior was instructed by congress in 1884 to take steps to examine and report on the condition of the natives of Alaska, "what lands if any should be reserved for their use," etc., no definite steps had been taken in

this direction until the passage in 1936 of the Alaska act which authorized the secretary of the interior to set aside as reservations, subject to ratification by the native groups, the lands occupied and used by these natives. In 1944, the secretary of the interior approved the establishment of 80 such reserves of various sizes in northern Alaska.

Under the law of June 6, 1924, as amended, the secretary of the interior also was vested with authority to promulgate regulations covering fishing in public waters of Alaska. The regulations issued by the secretary in 1942 contained a paragraph forbidding the establishment of traps "in any site in which any Alaska native or natives has or have any rights of fishery, by virtue of any grant or by virtue of aboriginal occupancy." The natives were permitted to petition the secretary for a hearing with regard to any aboriginal claims. The department authorized hearings in the fall of 1944 in various locations in southeastern Alaska from which native petitions had been received. These petitions provoked bitter opposition from commercial canneries, which claimed that the satisfaction of such native rights would destroy the canning industry in southeastern Alaska. The secretary appointed Richard H. Hanna, former chief justice of the supreme court of New Mexico, to preside at the hearings. In his decision based on the hearings, the secretary of the interior held that the lands in southeastern Alaska to which these native villages could establish aboriginal rights were exceedingly limited. The conflict created by the fisheries dispute halted the confirmation of native title to much of the land used and occupied by natives elsewhere in the territory.

Schools and Hospitals.—In 1946, there were 34,702 U.S. Indian children between the ages of 6 and 18 years enrolled in public schools with their white neighbours; 16,631 children attended federal day schools on reservations, where there were few whites; and 11,198 attended federal boarding schools. Mission and private schools enrolled 7,436. The federal government operated 256 boarding or day schools for Indians, and the number of high schools had been increased to 40. In Alaska approximately 2,000 native children were in territorial schools, 5,200 in federal schools, and about 650 in private or mission schools. The federal government operated 115 day schools and three boarding high schools in Alaska. The 1947 Interior Department Appropriation act authorized the transfer of the Sitka naval base to the Indian service, to be converted into a fourth Alaska native boarding vocational high school for about 600 children. There were still about 20,000 Indian children in the U.S. and about 2,600 in Alaska without school facilities.

The seven native hospitals in Alaska with an aggregate capacity of 324 beds were to be augmented by the erection of a 200-bed tuberculosis sanatorium at Sitka. The Indian service operated 67 hospitals and sanatoria in the U.S., with a total of 3,677 beds. During World War II, 14 hospitals were closed because of opportunity for Indians to obtain better medical attention elsewhere and, in some instances, because of a lack of personnel.

Navaho School and Economic Problems.—During 1945 and 1946, considerable concern was aroused by the continued failure of the federal government to meet its treaty obligations to the Navaho Indians of Arizona and New Mexico. By the treaty of 1868, the government had agreed to provide a classroom and a teacher for every 30 children of school age. In 1946 there were 55,000 Navahos, of whom at least 20,000 were children of school age. The federal government provided and operated school facilities for approximately 5,500 of these children; the Indians

the remaining 14,500.

With the return of Navaho veterans of World War II to the reservation, the absence of school facilities for these Indians was brought to the attention of the white citizens of Arizona and New Mexico, and a concerted drive was inaugurated to force the government to comply with its treaty agreement. The entire tribal council visited Washington, D.C., during the spring of 1946 to bring the matter to the attention of President Truman, congress, the bureau of the budget, and the secretary of the interior. As a result, the Interior Department Appropriation act for 1947 was amended to include an appropriation to begin the reconstruction and enlargement of two of the older boarding schools which were fast becoming obsolete.

The Navaho tribe grew more rapidly than any other group in the U.S. Reports indicated that there were about 8,000 at the time of their imprisonment at Bosque Redondo in New Mexico, when the resistance of the tribe to the U.S. finally terminated. After the signing of their treaty with the federal government, the Navaho tribe was returned to its home lands and given sheep.

The 25,000 square miles of desert land set aside as the tribe's reservation proved inadequate to support the increasing numbers of Indians and Indian livestock. As a result, a serious overgrazing produced both wind and water erosion, and a continuing decrease in forage. From 1933 to 1940, the soil conservation service of the department of agriculture co-operated with the Indian service to effect a substantial reduction in livestock with a view to removing nonproductive sheep, goats and horses, restoring grass cover to the denuded lands.

The necessary stock reduction at last was practically accomplished, with the result that the remaining sheep were better fed and produced more wool and heavier lambs, producing a cash income greater than that previously received by the Indians from this source. The economic plight of the Navaho, however, was yet to be relieved, for it was estimated that even under most careful management, the resources of the reservation and the lands off the reservation occupied by Navaho Indians could not adequately support more than 35,000 people. The government sought to provide irrigated farms by the diversion of the waters of the San Juan river, to provide farming lands for some 10,000. The Navahos were encouraged to increase the quantity and quality of their jewellery and weaving, and a study was made of other types of industrial development which might be instituted in the reservation area to give employment to additional thousands. The Indians were also given every encouragement to find wage employment off the reservation.

One of the biggest barriers to a constructive solution of the Navaho problem was the fact that less than 40% of these Indians were English-speaking and less than 10% literate in English. As the Navaho language had never been written, it was exceedingly difficult to communicate with a very large proportion of the population. In 1937, at the instance of Commissioner John Collier of the Indian service, Dr. John Harrington of the Smithsonian institution collaborated with Oliver La Farge, the wellknown author, in the development of a Navaho alphabet which might be written on the typewriter or set on a linotype, with a minimum of diacriticals. With the groundwork thus supplied, Robert W. Young, a specialist in Navaho linguistics, was employed by the Indian service to develop text materials in Navaho and to inaugurate the teaching of reading and writing of Navaho to both English-speaking and non-English-speaking Indians. Prior to World War II, more than 800 Indians had been taught to read and write their own language. During the war this skill was found to be of great value (see below). Later, Protestant missionaries on the reservation also adopted the Harrington-La Farge alphabet.

Colorado River Development.-The Appropriation act for 1865 contained a provision setting aside land near Parker on the Colorado river, as a reservation "for the Indians of the Colorado river and its tributaries." Between 1867 and 1870, efforts were made to provide gravity irrigation water for this reservation. Several attempts failed. In 1898, a centrifugal pump driven by a steam engine was installed in an attempt to supply irrigation water during the low stages of the river, and a complete pumping installation was finished in 1912, which brought about 5,000 acres under ditch. Operation of this plant with various improvements was continued until 1941. With the completion of Boulder dam, the waters of the Colorado river were regulated, and in 1937 congress appropriated funds for the erection of a diversion dam at Headgate Rock above Parker, Ariz. This dam was completed in 1941, and a main canal was begun which would ultimately lead to the subjugation of approximately 100,000 acres. The Mohave and Chemehuevi Indians composing the Colorado river tribes numbered about 800. As the irrigable land on their reservation was far in excess of what these Indians themselves could use, it was proposed that they reserve approximately 25,000 acres for their own use, and make the remainder available to landless Indians of other tribes "of the Colorado river and its tributaries" as originally contemplated by congress.

With the outbreak of World War II, the extension of the main canal and the subjugation of land was stopped. In 1942, the central portion of the Colorado River reservation was selected as one of the larger war relocation centres for the Japanese evacuated from California, and the subjugation of 2,000 acres of Colorado river land and the extension of canals and laterals were carried on as a part of a project to make the evacuees self-supporting. On Jan. 1, 1945, the War Relocation authority notified the Indian service of its plan to evacuate the entire area during that year, and promised to return this irrigable land to the Indian service at intervals during the year. In the light of this announcement, the tribal council of the Colorado river tribes passed an ordinance on Feb. 3, 1945, setting aside the lower two-thirds of the reservation for colonization by other Arizona Indians. On Sept. 1 of that year the first group of 16 Hopi families from the barren mesas of northern Arizona accepted the invitation, and moved to Colorado river irrigated lands. Beginning somewhat slowly after the close of the war, appropriations were made again for the subjugation of this land. Plans were laid to settle ultimately as many families of Hopi, Navaho, Papago, and other landless southwest Indians as possible in this area.

Other Developments of the Decade.—Research by the health division of the office of Indian affairs over a period of years resulted in the announcement in 1938 that trachoma is a virus disease. The following year, Dr. Fred Loe, senior physician on the Rosebud Indian reservation, announced that sulfanilamide had proved an effective agent for arresting the disease. Further work with the sulfa drugs established sulfanilamide as a specific, but proved neoprontosil to be less toxic to many individuals. Through the use of the new sulfa drugs, trachoma was almost eliminated from the northern reservations, where the

Indians were of easier access. Progress was also made on the Navaho reservation, where it was estimated that some 40% of the Indians had been infected.

In 1941, the committee on human development of the University of Chicago, under an arrangement with the office of Indian affairs, undertook a study of Indian personality development as influenced by education. Several years of field study by a group of anthropologists and psychologists working with field employees of the Indian service, resulted in a series of valuable reports. The first volume of findings, The Hopi Way, by Dr. Laura Thompson and Dr. Alice Joseph, was published late in 1944. The second volume, Warriors Without Weapons, by Dr. Gordon MacGregor, was published in 1945 by the University of Chicago press. Two volumes dealing with the Indians of the Navaho reservation by Dr. Clyde Kluckhohn of Harvard university and associates, was printed by the Harvard University press. A fourth volume dealing with the Papago was to be published by the University.of

Approximately 25,000 Indian men and women served in the U.S. armed forces during World War II, and some 40,000 Indians left the reservations to engage in war work. No discrimination with respect to Indians was practised by any branch of the service, and many Indians won commendation with the Army, Navy and marine corps. Two Indians received the congressional medal of honour for outstanding bravery, 72 Indians received the air medal, 35 the distinguished flying cross, 52 the silver star, 53 the bronze star medal, four the distinguished service cross and three the soldier's medal. A group of approximately 300 Navaho Indians especially distinguished themselves using their native language as code talkers with the marine corps in the Pacific.

One of the few groups of Americans to be displaced because of hostilities was the Aleuts west of Dutch Harbor, Alaska. Approximately 54 Aleuts and two employees of the Indian service were captured by the Japanese during the attack on Attu. Thereafter, the remaining Aleut villages were transferred to the mainland in southwestern Alaska, where they remained until 1944. Many of the Attu Aleuts died in captivity. Those repatriated joined the village of Atka about 400 miles east of their former remote outpost.

Representatives of more than 50 tribes, bands or groups of Indians from 27 states, met at Denver on Nov. 15, 1944, to organize the National Congress of the American Indian. They united in agreeing that there was a variety of common interests which could be served by such an organization having no official connection with the Indian service. The organization undertook numerous activities on behalf of the various Indian groups.

In Aug. 1942, the office of Indian affairs was one of several civilian agencies moved out of Washington, D.C. Headquarters were established in Chicago, Ill. Throughout the early part of the decade 1937–46, John Collier (who had been appointed by President Roosevelt in 1933) served as U.S. commissioner of Indian affairs. He resigned in 1945 and was succeeded by William A. Brophy of Albuquerque, N.M.

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Indo-China, French

See French Colonial Empire; Siam; World War II.

Industrial Health

Interest in the health and welfare of industrial workers made remarkable progress during the ten years 1937-46. Social legislation, the war years and a growing concern on the part of labour for the physical well-being of its membership, were the most conspicuous of many forces tending to elevate industrial health to a degree of eminence in medical thought and practice never before attained. Once concerned solely with the clinical management of disabilities arising out of employment in accordance with strict interpretation of the statutory requirements of workmen's compensation laws, industrial health and welfare drew heavily upon all the disciplines associated with medicine and hygiene proper, and made constantly increasing demands on the pure sciences, social science, engineering, law, psychology and business administration. During World War II particularly it became abundantly clear that the major productive resources of a nation were not solely materials or machines but healthy, vigorous manpower. Out of this concept, modern industrial medicine came to look for its principal inspiration.

Changing Scope and Content.—Industrial health began to assert itself as a specialty in medicine calling for a degree of preparation on the part of those electing to serve therein quite as exacting as any other field. It became clear that the true function of the industrial physicians lay in the direction of social medicine rather than remedial service, with the latter left preferably to private practitioners and consultants. Every substantial improvement in public health services during this period was in consequence attended by a commensurate elevation in the standards or application of industrial hygiene. Preventable industrial accidents and occupational disease were only minor contributors to the excessive amounts of lost time and wages in industry as compared to ordinary illness. Steps were taken therefore to bring industrial physicians, private practitioners and health administrators into closer alignment. A clearer understanding of industry as a convenient avenue for the administration of many health services brought the interdependence of these three groups into clearer perspective. Case-finding programs dealing with early discovery of tuberculosis, venereal disease and visual disorders became common and accepted practices. The trinity of physical well-being, mental health and satisfactory environment, variously described as psychosomatic medicine or the "total-man" approach, was recognized as having singular application to the work of industrial physicians who were intimately concerned with human health and behaviour in an industrial age and the necessity for maintaining healthful, pleasant and stimulating work conditions.

As an answer to these and other questions, industrial physicians began to inquire more closely into the techniques of positive health as opposed to the negative qualities of remedial and preventive medicine. This transfer of interest to the causes of health rather than the aetiology of disease was a fundamental change in point of view which gave promise of shaping much of the future course of industrial medicine.

Industrial Health and the War.—With the exception of a number of basic materials which were in short supply, the pre-eminent problem in the production of war material

was manpower. The enlistment or draft of the entire body of able-bodied men in the younger age classifications into the armed forces made it necessary to enhance the labour pool by great numbers of women, and by over-age and substandard workers. Medical directors in industry promptly learned that the physical examination standards enforced by recruitment and draft boards were largely inapplicable to industry, and that proper placement of both able-bodied and handicapped workers in suitable jobs was sufficient to maintain production at high levels. The health status of the millions of inexperienced women employed in war plants required special measures. The principal reasons for absence of women from work arose from causes associated with the home and family to a much greater extent than in the case of their male co-workers. Childbearing in particular called for special regulations regarding employment and medical supervision. Many thousands of handicapped of all types and degree were used in a wide variety of industrial operations. In general it was found that they were as productive as their able-bodied co-workers, were absent less, changed jobs infrequently and were less likely to sustain severe injury.

Armies and navies became huge employers of labour in the manufacture of munitions, ships, planes and all the other endless requirements of the fighting forces. Industrial health became an important function of the preventive medical divisions of these services. Industrial medical officers and hygienists were stationed at munitions plants, shipyards, air depots, arsenals, chemical warfare installations, in the service commands and naval districts and at ports of embarkation. Laboratories of industrial hygiene were maintained to seek out and control all sources of occupational exposure and risk. Aviation medicine came to identify itself closely with the whole field of industrial health in full recognition of the health requirements of production workers, ground crews and fliers.

The discovery and use of atomic energy as an implement of war and its unimaginable implications as a source of usable power called for prompt orientation respecting its predictable use in industry and medicine. The actual production of nuclear energy was accomplished with a healthy appreciation of the fantastic hazard. The successful adaptation of the techniques of industrial medicine and engineering to this new and deadly substance was remarkable and reassuring. From this point of view, there seemed to be no insuperable obstacle to the production of atomic energy, although it was not yet altogether clear how these titanic forces could be chained for safe use in industrial power plants or in transportation.

Social and Labour Legislation.—Social security legislation enacted in 1935 in the United States unquestionably exercised a profound influence upon the entire industrial health structure. In addition to old-age and unemployment benefits, these enactments provided for much broader support of the public health. Industrial health as an important segment of community and national well-being benefited commensurately. Funds became available through the U.S. public health service and were assigned to state health departments to subsidize new bureaus of industrial hygiene or to enlarge those already in existence. Under this enlightened approach, the original handful of laboratories and investigational services so multiplied that 39 states and a dozen cities provided some form of supervisory control over workers and working conditions. At the outset, surveys were made, and for the first time accurate estimates were compiled of the size and nature of the industrial health problem. During the same period the division of industrial hygiene in the U.S. public health

service proper notably expanded to encompass sections dealing with state relations, research and occupational dermatosis, effectuated in turn by medical, engineering and statistical units. The wisdom of this kind of organization was amply demonstrated in the war years.

In England the Factories act of 1937 served much the same role in vitalizing industrial health services. The provisions of the older factory and work shop laws were revised, consolidated and brought into harmony with public health laws and those governing workmen's compensation. The meaning of the term "factory" was considerably broadened to include small shops and occupations not previously involved, the effect of which was to extend protection to much greater numbers of workers. Special attention was directed at working hours by day and week, sanitary and hygienic working conditions, medical and nursing supervision, first aid and emergency services, overcrowding and the employment of women and minors, all assigned variously to the factory inspectorate or to the local authorities.

New and improved standards governing hours of work and wage levels were widely adopted, with consequent beneficial effect upon the welfare of the working population. A public contract act passed during World War II in the United States made it unlawful for firms engaged in interstate commerce to permit work in excess of 8 hours in any one day, or in excess of 40 hours in any one week, to employ minors or convict labour or to perform work under conditions determined to be unsafe or unhealthful by the state factory inspection services. To accomplish these purposes, the U.S. department of labour conducted special training courses for factory inspectors and set up regional and state administrative divisions.

Trends in workmen's compensation took the customary course of broader coverage and liberalization. The favourable trends in both severity and frequency of industrial accidents were interrupted by World War II, mainly because of the wartime hiring of inexperienced workers and the extraordinary pressure under which goods were produced. Statistics throughout the ten-year period indicated that occupational disease, although a serious problem in only a few dangerous trades, was on the increase, possibly because of better recognition and improved reporting. Dermatitis as in other years was responsible for most of the claims for compensation. During these years, the objectives of workmen's compensation were re-examined; changes in practical administration were made, many of which referred to standards of medical care, qualifications of physicians, medical participation in administrative practice, fee schedules and the like.

Since ordinary illness was so heavy a contributor to lost time in industry, the advantages of compulsory health insurance as an extension of the social security system or in the form of a national health act were widely debated in the United States and Great Britain. Labour and social workers were strong advocates. The medical profession for the most part was inclined to a conservative evolutionary approach, based on voluntary participation, local determination of needs and minimum governmental intervention. Industrial management as a rule supported this latter view.

Attitude of Management and Labour.—There was a strong tendency during World War II to promote joint labour-management co-operation respecting industrial health, safety and welfare. Traditionally industrial management had assumed responsibility for all medical serv-

ices, whether limited to treatment of occupational disability or whether they extended widely into prevention and to care of ordinary illness for the worker and his dependents. The turn of events in the decade 1937–46 suggested that labour was now thoroughly alive to the value of health as a factor in individual and collective security, and that health and welfare were destined to be prominent elements in all collective bargaining in the future. The National Bituminous Coal Wage agreement of 1946 in the United States was the most pronounced departure from conventional procedure. Under this plan, a medical care fund was created by pay roll deduction to be administered entirely by the workers. Welfare and retirement funds made up of imposts against production were adopted in several employment contracts.

Industrial health services were well supported by large plants where size or special nature of the work made a plant medical department a practical necessity. Several experiments indicated clearly that small plants could avail themselves of similar high-grade medical programs if they banded together for this purpose.

Rehabilitation.—Always a major concern of physicians in industry, rehabilitation took on added significance during World War II and in the early postwar years. Soldiering is an occupation, and those responsible for the conduct of military activity took elaborate pains to recondition the wounded and disabled, primarily to return them to duty or, if unfit for further service, to put them in the best possible position to assume a useful place in society. Elaborate medical and surgical establishments were created for the blind, the deaf, amputees and for the host of traumatic injuries characteristic of war. The policy of beginning the rehabilitation process at the earliest possible time was an invaluable factor in shortening the period of convalescence, minimizing the psychoneurotic component of injury and stimulating the will to recovery. Veterans' facilities began to assume these functions as the character of the total problem took shape. At the same time, rehabilitation of disabled civilians, who in point of numbers exceeded the veterans' problem manyfold and who represented a much greater collective burden to society, was very considerably expanded. Provisions were made to allow all eligible handicapped to receive medical care and essential vocational guidance, training and placement. All these developments were of concern to industry, since reemployment was the sole mark of successful rehabilitation. It was learned that almost every disabled person had some (and frequently great) residual ability; this was the important key to successful job assignment rather than cumbersome and unscientific percentage estimations of disability. Selective placement became one of the valuable tools of the industrial physician, the personnel manager and the shop supervisor through the successful and frequently brilliant matching of physical and mental capacities and job requirements.

Rehabilitation and reconditioning re-emphasized the great actual and often unrealized values in physical medicine and occupational therapy. In both England and the United States steps were taken to investigate new methods, adapt new concepts in biophysics and biochemistry to the restorative and healing processes and to provide for greatly expanded training facilities for physicians and technical aides. Particularly in the industrially disabled, there was a strong trend toward functional reconditioning under actual working conditions in addition to the conventional armamentarium of the occupational therapist.

Professional and Technical Advance.-The growing dependence of industry upon medicine and hygiene for essential services made it necessary to develop an awareness on the part of the medical profession at large of its obligations and opportunities in this field. Since every physician could expect to encounter industrial medical problems early in his career, medical schools began to introduce a much more substantial amount of essential teaching. The trend toward specialization was recognized in England, Canada and the United States, and the necessary experience and education needed for certification began to take form. Divisions of social medicine were set up in medical and public health schools in which industrial medicine was a substantial component. New medical journals dealing with occupational health were launched by both the British and American Medical associations.

Industrial hygiene reached its highest development thus far during World War II. The manufacture of munitions was conducted at astounding levels of safety and health. An extraordinary range of experimental and investigative activity occurred. The physiology of work was of particular interest. It was learned again that longer hours of work are not accompanied by commensurate increases in output, and that rest pauses are of definite practical value, especially in monotonous and repetitious work. Ventilation engineers and industrial hygienists perfected methods of air analysis and purification and of establishing control over temperature and humidity. Aviation medicine made great progress in the determination of risks associated with flight at high altitudes and designed methods to combat them. Special schools for flight surgeons were set up in the armed services to facilitate proper personnel selection, preventive measures and adequate treatment. A better understanding of resuscitation resulted from extensive research into pulmonary and cardiac function, the physical and pharmicologic action of gases and the improved use of mechanical aids to respiration. Wound care and healing were spectacularly improved as the result of the advances in chemotherapy and antibiotics. War injuries stimulated great advances in plastic surgery and the development of prosthetic appliances. Tropical disease became for the first time a measurable factor in industrial medicine in temperate zones, detected largely in veterans examined for employment or in others returning by rapid transportation from infested areas.

The real function of physical examination in industry for placement rather than exclusion was better understood by physicians, management and labour. Nutrition of the industrial worker was looked upon as of first importance in the maintenance of health and high productive capacity. Workers' wives were taught food values and proper preparation. Many factories developed in-plant food service. Sanitation and good housekeeping were attacked scientifically and brought into harmony with air and water purification, plant design and industrial waste disposal. The use of aluminum to prevent and treat silicosis showed considerable promise, but further clinical trial was still needed to assay results.

British Anti-Lewisite (BAL), a product of chemical warfare investigation intended as an antidote for arsenical blister-gases, was found to be effective against systemic arsenic poisoning. There were indications that mercury and other metal poisoning might be successfully attacked along similar lines. Industrial dentists increased in number and activity. The number of industrial nurses increased nearly threefold. Because of this rapid growth, special problems of preparation and experience presented themselves, and guides of conduct for the nurse and first aid worker in industry were prepared. Many new dermatitis producers were catalogued. Cutting-oil dermatitis was a gross offender, and the causes and means of prevention and care were developed. Psychiatry demonstrated genuine values to industry as a means of combating human maladjustment commonly manifested as absenteeism, rapid labour turnover, high rate of accident incidence and labour trouble. Toxicologists were concerned with many new and untested materials and processes as well as the old offenders. Some of the rarer metals, in particular, such as selenium, tellurium and beryllium came into wider use and were scrutinized for potential risks. The list of new solvents, plastics, coatings, cleaners, dyes, fungicides-in a word, the products of modern chemistry-were so voluminous as to make real knowledge of potential toxicity an impossibility. Chemical manufacturers, public health officers and medical authorities took steps to protect the fabricator and the consumer by a program of proper labelling and by popular and professional education.

The impact of the atom on industry and medicine, the increased emphasis placed on health as a factor in individual and collective security, the change in emphasis from treatment and prevention to positive health, the war and postwar preoccupation with rehabilitation and selective placement, together with great advances in industrial hygiene, industrial medicine and surgery—all underscored the expanding importance of medical service in an industrial age and gave shape and substance to likely developments in the future. (C. M. PN.)

Great Britain.—From the early days of the 19th century, up to 1946, no decade witnessed such immense progress in the spirit and practice of medicine in industry as the years 1937-46. It was a time of great legislative acts, rapid advances in research and the application of the newer knowledge, a wider dissemination of the newer knowledge by means of publications and congresses, the establishment of university chairs and readerships in social medicine and industrial health and the further recognition by governments, managements, trade unions and men of the value of health in work. The greatest significant development of the period was the recognition of the individual worker not as an impersonal physical cog in a great machine but rather as an individual, capable of successful integration into a harmonious healthy community. The Factories act of 1937 became the prototype for good industrial legislation throughout the world. It indicated in the sections dealing with health, safety and welfare the importance of the health of the individual and the group. These models of progressive industrial legislation saw during World War II some abrogation of certain sections, in particular those dealing with hours of work and the employment of women. As a measure of the significance of the application of the law and good industrial medicine to wartime activities, it should be mentioned that the mortality rate from such a disease as T.N.T. poisoning was less than 20% of that experienced in the four years of World War I. The Annual Report of the chief inspector of factories and the ministry of labour and national service illustrated the very considerable advances made in the prevention of disease in industry. An even healthier sign was the effort of employers, both great and small, to produce optimum conditions of work rather than the minimum laid down by the state.

Of equal significance with the passing of acts of parliament in the evolution of new legislation was the development of university departments dealing with social medicine and industrial health. The first great school initiated at Harvard in 1918 remained a pattern for the whole

world. The years 1937–46 saw the development and expansion of university departments both on the continent and in the British commonwealth. The progress from the beginning of the century was slow, but the rapidity with which the wider problems of social and industrial medicine received university attention in the decade augured well for the future health of all industrial communities. The universities and research institutions recognized that their departments would in time become advisers to governments and industry on the wider problems of environment, plant and factory design, amenities and the complex aspects of management and research.

There was a growing interest in the psychology of the worker, the correct selection of the individual for his job, the analysis of his job and the psychological environment in which his task was performed; and industry received a great lead from those experienced psychologists who were responsible for the selection and placing of service personnel. There was at the same time a considerable development in the application of research to industrial problems. Much of this research was in terms of toxicology and the application of the knowledge gained to the immediate problems of industry; the almost world-wide problem of silicosis received much attention. The one black spot was the still high incidence of those diseases of the lung which affect coal miners, and are known under the generic term of pneumoconiosis.

Rehabilitation of the injured or sick worker was among. the most important developments in industrial health schemes. The various compensation acts were such that to a great extent they had blinded both medicine and management to the possibilities of rapid recovery and early return to work. For too long the capacity of the sick and injured person, and indeed of the cripple, to perform a useful task in society was seriously underrated. Official committees investigated the problem and industry faced its responsibilities by establishing within its own structure the means for assisting in the rehabilitation of the sick and injured worker. Great Britain made great practical progress in rehabilitation and the employment of disabled persons by the passing of the Disabled Persons' act of 1944. The health of the industrial population during World War II was maintained in the most remarkable manner by the provision of the factory canteen. (See also Accidents; DERMATOLOGY; MEDICINE.)

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Industrial Production

See Business Review; War Production.

Industrial Research

Industrial research is one of the major sources of new additions to national economy. Its developments contribute to the improvement of existing industries and to the creation of new industries. When the findings of industrial research are translated into production, the result may be new employment opportunities for labour, greater stability for business and new or better products and services for the consumer.

Year	Labora tories		search Expenditures		s- Government n (Federal and State)†	Colleges and Univer- sities†	Research Institutes†	Total Scien- tific Research Expenditures
1936		41,000	\$152,000,0001	2.530.000	33.891.000	25,000,000	4,701,000	218,122,000
1937		42,000	160.000.000		40,786,000	•••	4,635,000	• • •
1938		44,292	177,168,000	4,080,000	49,382,000	28,496,000	4,596,000	263,722,000
1939	. 2,000	48,000	200,000,000			:::	4,531,000	
1940	. 2,150	60,000	234,000,000		69,136,000	31,450,000	4,549,000	345,245,000
1941		70,000	300,000,000§		207,259,000	:::	• • •	• • •
1942	. 2,400	85,000§	350,000,000§		332,151,000	39,575,000	• • •	• • •
1943		:‡	400,000,000§		561,507,000	• • •	• • •	• • •
1944			450,000,000§		719,813,000	•••	• • •	• • •
1945			500,000,000§		• • •	•••	• • •	• • •
1946			450,000,000§	•••	•••	•••	• • •	• • •

*Compiled from various sources ¡Vannevar Bush, Science—The Endless Frontier (Washington, D.C., Supt. Docs , July 1945), ip. 80. !Not available §Estimated

By the end of the decade 1937–46, the systematic application of scientific knowledge and methods to the solution of industrial problems had become the principal organized research activity of the United States, exclusive of that undertaken for the government in time of war. Between 1937 and 1946, the scope of industrial research in the United States more than doubled; the number of laboratories grew from about 1,500 to more than 2,400, employment went up from about 40,000 to more than 85,000, and expenditures were increased from \$152,000,000 to over \$400,000,000. (See Table I.)

Prior to 1875 there were few, if any, industrial research laboratories in the 1946 sense of the term. In the following decades, however, several new industries, particularly the electrical industry, adopted energetic programs of research and development. The first of these was probably the laboratory of Thomas Edison at Menlo Park, N.J., established in 1876. This was followed by the General Electric laboratory in 1901, the du Pont Eastern laboratory in 1902, the General Motors laboratories in 1910, the Eastman Kodak laboratory in 1913, and the Westinghouse laboratory in 1917.

World War I acted as a major stimulus to the growth of industrial research in the United States by demonstrating the nation's dependence on German technology, particularly for chemicals, dyes, drugs and optical glass. Much of the U.S. chemical industry, with its extensive research facilities, grew up in response to needs which had been revealed by that war. By 1920, the number of industrial laboratories had increased to about 300, with some 6,000 technicians and scientists, two-thirds of whom were employed in the electrical, chemical and rubber industries.

Following World War I, research became an indispensable function of those progressive industries which sought to maintain or improve their position by more efficient production and new or improved products. The steady growth in industrial laboratories was interrupted only between the years 1931 and 1933, when the business depression caused a reduction from 1,622 laboratories in 1931 to 1,455 laboratories in 1933. By 1935, however, this loss had been regained, and the upward trend was maintained without further reversal throughout the decade 1937–46.

The decade was certainly the most active and productive in the history of U.S. industrial research. United States participation in World War II, in particular, brought about a tremendous acceleration in engineering development, improvement in equipment, and translation of designs to quantity production through the large-scale sponsoring of research by government agencies. The Office of Scientific Research and Development, established in June 1941, sponsored research on war implements and processes for producing them. The Office of Production Research and Development of the War Production board, created in Nov. 1942, sponsored research on war materials. The U.S. war and navy departments enormously expanded their

peacetime research activi-

As a result, government expenditures for research increased from approximately \$69,000,000 in 1940 to an estimated \$720,000,000 in 1944 (see Table I), approximately half of this increase going to finance research on war problems "farmed out" on contract to industrial laboratories.

Despite the fact that much of the research of the decade was of a military character, many of the more outstanding developments of the period had important peacetime potentials. The development of atomic fission, for example, was tremendously accelerated by its imagination-staggering power as a weapon; the same power was applicable to peacetime pursuits, and research to this end was in progress. Similar important peacetime potentials were offered by atabrine, radar, jet engines, high-octane gasolines, synthetic rubber and many other war-sponsored developments.

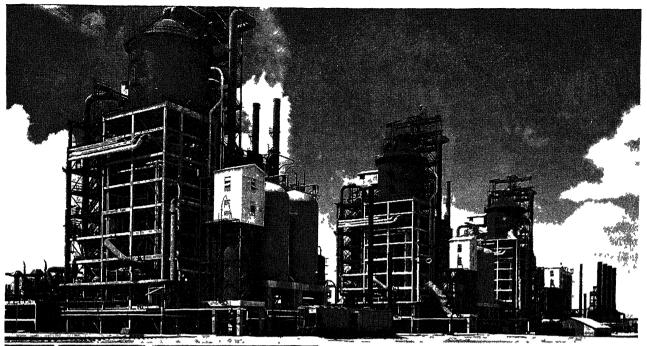
It is axiomatic that the largest and most active industrial research programs are supported by those industries which were themselves created by industrial research. Surveys during the latter part of the decade showed that nearly 70% of all research workers were employed in the chemical, petroleum, electrical communication, electrical manufacturing, machinery, rubber and automotive industries. While the chemical industry spent more than 3% of its net sales income on research, and the metal-working industries about 1%, it was interesting to note that about 98.5% of all manufacturers spent practically nothing on research.

While, in general, the largest research staffs were supported by the larger, progressive companies, considerable progress was noted in making the benefits of research available to smaller companies through the establishment of nonprofit research institutes. In general, such institutes were privately endowed organizations undertaking specific research projects at the behest of various companies who paid direct personnel and out-of-pocket expenses allocatable to their projects. Prominent among such organizations were the Mellon institute (founded in 1911), the Battelle Memorial institute (1929), and the Armour Research foundation (1936). The organization of two new research institutes-the Southern Research institute and the Midwest Research institute-was announced during World War II. A number of additional institutes were proposed for establishment in the postwar period.

Similar research institutes, making research available to small companies and enterprising individuals, were established by the engineering schools of several universities. Examples were Ohio State university, Purdue university, and the University of Michigan.

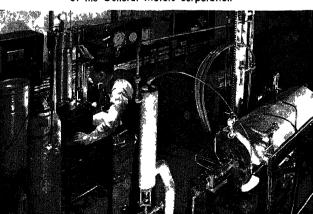
Along with the growth of research institutes, both independent and in conjunction with engineering schools, there was a notable increase in research supported by industrial associations made up of a number of companies which had grouped themselves together to solve problems common to all. Noteworthy examples of such industrial associations were the Portland Cement association, the Bituminous Coal Research, Inc., the Grey Iron Research institute, the Alloy Castings institute, the Copper and Brass Research association and others.

A particularly noteworthy aspect of research during the





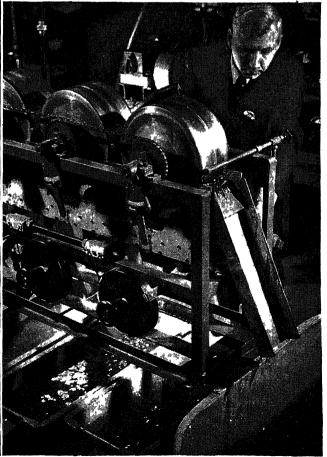
Below: Experimental plant for the production of triptane, an anti-knock motor fuel. The plant was staffed by research scientists of the General Motors corporation



Above: Three fluid catalytic cracking units and a catalytic gas fractionation unit operated by the Cities Service company

Left: The electron microscope, capable of magnifying up to 200,-000 diameters. Seated before the instrument are its co-inventers, Vladimir K. Zworykin (right) and James Hillier

Below: Wet magnetic separator for dividing magnetite from quartz in magnetic iron ore



decade 1937-46; was the increasing recognition of industry's responsibility for basic investigations of a pure scientific character, that is, research directed toward a better understanding of nature and its laws without specific commercial ends. As a matter of interest, it may be observed that the great majority of developments which led to the establishment of successful new industries had resulted from such noncommercial investigations. It was estimated that approximately 5% of the research under prosecution at the end of the decade in industrial laboratories was of this sort; corresponding proportions in government and university laboratories were 15% and 70% respectively.

Research in Iron and Steel.—Among the important results of industrial research in the steel industry during the decade 1937–46, were the development of a number of new alloys offering exceptional forming and drawing properties, high-temperature strength and magnetic permeability. At the same time there was a steady improvement in the quality of many traditional products. As a valuable adjunct to these practical developments, noteworthy progress was also made in studying the equilibrium and isothermal transformation behaviour of iron-carbon-alloy solutions and in arriving at a better understanding of the complex structure of ferrous materials.

One of the most impressive developments in alloying was the rapid creation of an entire new system of alloy steel specifications, the so-called national emergency (NE) steels. Developed as a war measure to increase the output of alloy steel despite curtailed supplies of many important alloying elements, NE steels reduced the requirement for scarce alloying elements by making use of the fact, established from end-quench hardenability studies, that small quantities of several elements are often more effective than a large quantity of one element, and that the more plentiful elements can often replace scarce elements when proper heat-treatment is used. In actual practice, the new specifications reduced the requirements for nickel, molybdenum and chromium to the extent that a large part of the need could be met from the alloy content of available steel scrap; the NE 8600, 8700, and 9400 series, for example, were alloyed almost entirely with selected scrap.

Considerable interest was noted in the investigation of extremely small quantities (less than 0.01 of 1%) of alloying materials. The effect of small additions of tellurium (0.005%) in reducing the annealing cycle of malleable iron was announced in 1937. Similar amounts of boron were found to overcome the stabilizing effect of small amounts of residual chromium which finds its way via scrap into malleable iron castings. A later development in this field was the discovery that boron in amounts as small as 0.0006% is effective in increasing the hardenability of many types of steel from carbon through nearly the entire alloy range, especially the leaner NE alloys. Optimum results were obtained from 0.001% to 0.003% boron; more than 0.003% made hot-working difficult.

Research on alloys capable of withstanding high stresses at elevated temperatures was stimulated by the trend to higher temperatures and pressures in steam engineering, in the cracking and processing of gasoline and by such high-temperature mechanisms as the turbo-supercharger and jet engine for aircraft. Highly-alloyed stainless steels such as 18-8 (18% chromium-8% nickel) had been used in steam turbine blading as early as 1927; these alloys were improved by the addition of molybdenum and tungsten to enhance high-temperature strength and of columbium and titanium to reduce embrittlement and intergrannular de-

terioration. Later developments were more complex alloys, containing chromium, nickel, molybdenum, tungsten, titanium and columbium for use at temperature levels varying between 1,000°F. and 1,800°F. depending on the loads imposed and the service life required. Some of these materials included cobalt-base alloys containing chromium, nickel and molybdenum or tungsten with little or no iron; agehardening nickel-base alloys containing chromium; and chromium-base alloys containing molybdenum and tungsten.

Stabilized nonaging steels for deep-drawing applications had first been announced in 1933. These materials, possessing uniform ductility with improved freedom from stretcher straining, became increasingly important for such severe forming-requirements as automobile fenders and allsteel tops. In 1940, the steel industry produced approximately 1,250,000 tons of these materials.

A later development in electrical steels was oriented cold-reduced silicon steel, in which the grains are oriented in the direction of maximum permeability and minimum hysteresis loss. Possessing magnetic permeability several times that of ordinary hot-rolled non-oriented silicon steel with 50% less hysteresis loss, this material was used in the manufacture of wound transformer cores.

Development in the field of processing techniques was particularly fruitful during the decade. One of the most important advances was the noteworthy improvement in continuous rolling facilities, making available an increased volume of sheet metal and wide strip of improved quality at lower cost, for automobiles, refrigerators, washing machines, stoves, sanitary ware and numerous other products. This development had been extended, in 1936, to the commercial production of flat-rolled galvanized sheet suitable for severe forming and moderately severe drawing. Hot-dipped aluminum-coated steel, produced by an improved process from cold-reduced iron and steel coils, was made available for application in fields where moderate heat and corrosion resistance are required.

Development of processes for concentrating low-grade iron ores received increasing emphasis. Gravity, flotation, magnetic and electrostatic processes were all under comprehensive investigation. Froth flotation, in which various chemicals are utilized to promote the selective adhesion of air bubbles to finely ground iron oxide or waste minerals in the form of an easily separated froth, yielded promising results in a number of separation problems. The diminishing supply of cheap high-grade ore deposits in the United States lent considerable importance and interest to work in this field.

Advances in fabricating techniques were very numerous in the decade, especially during the war-production period. Powdered metallurgy, for many years widely used in forming platinum, tungsten and cemented carbides, was extended to ferrous materials by the development of a number of mechanical, gas reduction, electrolytic, precipitation. condensation and chemical processes for producing finemesh pure iron powder; an important advantage of this process was its economy of metal and labour in finishing operations. Welding grew steadily in importance as a massproduction process; among later developments were the heliarc and pressure welding techniques. A new development in steel casting was the discovery, announced in 1940, that the low ductility of cast steel is apparently due to the presence of certain nonmetallics, particularly manganese sulphide, which can be removed from the melt by proper proportioning of deoxidizing agents and timing of deoxidation. Electropolishing, essentially electroplating in reverse, became a useful process for polishing stainless steel;

unlike mechanical polishing methods, the new process penetrates into pits and depressions, thus giving many materials a brilliant lustre even in the rough state. (See also Iron and Steel.)

Nonferrous Metals.—Enormous demands for aluminum (q.v.) in aircraft production during World War II brought about numerous advances in the production and fabrication of this light metal. Noteworthy developments in production were the introduction of methods for extracting aluminum from lower grade ores and the application of continuous casting to the production of high-quality billets directly from moulten metal. Intensive research led to stronger aluminum alloys—before the war 24S with a tensile strength of 68,000 lb. per sq.in. and, later, alloy 75S with a tensile strength of 82,000 lb. per sq.in. Brazing, a new technique in aluminum fabrication, was made possible by the development of special brazing alloys and suitable fluxes; other developments in fabrication included improvements in riveting and electric welding.

Production of magnesium (q.v.), a metal 35% lighter than aluminum, increased spectacularly during the decade; productive capacity in the United States, only 4,000,000 lb. in 1939, rose to approximately 500,000,000 lb. at the peak of the war production period. At the end of the decade there were two principal processes—electrolytic and thermal. In the electrolytic process, magnesium chloride is reduced to pure magnesium in an electric cell; in the thermal process, magnesium oxide is reduced by carbon or ferrosilicon under high temperature. Sources of raw materials include magnesium chloride brines, magnesite ores, dolomite and sea water. Alloyed with aluminum, zinc, or manganese, magnesium was indispensable as a weight-reducing metal in high performance aircraft. In 1946 the metal was available in cast, sheet, tube and powder form.

An important development in copper (q.v.) technology was the introduction of continuous casting to the production of very dense high-conductivity copper-wire bars. In this process the metal is solidified while being poured or drawn through an aperture of the desired size and shape. In addition to delicate thermal and mechanical control, special oxygen-free atmospheres are required for successful results. Further developments in copper were the production of extremely thin copper sheets by electrodeposition; bi-metal sheets from composite ingots of copper and steel; and beryllium copper alloys, comparable in hardness to some grades of steel, for springs and electrical applications.

Among the newest and most important uses of silver (q.v.) during the decade were silver alloy bearings. The excellent frictional and seizure-resistant properties of silver-rich alloys made them ideal for master rod bearings and other highly-loaded bearings for aircraft engines. In such applications, silver was applied by rolling, silver soldering, casting or electrodeposition to a mild steel backing. For best results, the oxygen content of the silver was kept to a minimum.

Numerous advances were noted in processes for producing nonferrous metal surfaces on steel and other materials. Much interest centred around new processes for tin plating; electrolytic tinning, continuous hot-dip tinning and vapour-phase deposition were greatly improved. Important contributions to these new processes were the use of aluminum in the bath and gaseous fluxes. New processes were announced for aluminum-coated steel, silver-and-coppercoated steel, and beryllium-coated iron and nickel alloys.

Shortages of critical nonferrous metals during the war stimulated extensive research on methods of extracting scarce metals from low-grade domestic and foreign ores. New processes were announced for the production of tin, molybdenum, chromium, manganese, bismuth, antimony and beryllium from U.S. deposits.

Petroleum Industry.-During the decade, the petroleum industry made great strides in the transformation from a relatively simple enterprise for getting oil out of the ground as quickly as possible and separating it into a few saleable fractions, to a more scientific industry for producing spark-ignition engine fuels, lubricants and other products by chemical and physical processes of the utmost complexity. This remarkable transformation, insofar as automotive and aircraft fuels were concerned, was largely the consequence of a few basic discoveries, established as early as 1926, regarding the correlation between molecular structure and the usefulness of pure hydrocarbons as fuels. These discoveries indicated that many hydrocarbons which have branched-chain molecular structure are superior in antiknock quality to those isomers which have straightchain structure and which predominate in the normal gasoline fractions of petroleum.

A major research effort of the decade 1937–46, therefore, was the development of refining processes for producing from crude oil greater amounts of hydrocarbon products possessing these desirable structures which yield higher octane numbers and greater utility. This resulted in the introduction in 1936 of the Houdry fixed-bed catalytic cracking process, in which selective cracking was accomplished by passing preheated vapours through a catalytic reactor chamber. With the outbreak of World War II, the greatly increased demand for aviation gasoline stimulated the development of still better cracking processes. Among these were the fluid catalyst process, announced in 1941, and the new Houdry adiabatic-cracking process, announced in 1942.

Along with this rapid development of improved cracking techniques, there was a large amount of research on processes for synthesizing specific components for blending high-octane gasolines. In 1935, the first 100-octane base fuel (iso-octane) was obtained on a semiworks scale by the polymerization of isobutylene from refinery-cracked gas, followed by hydrogenation; this process went into commercial production in 1937. Catalytic alkylation, a process for combining isoparaffins with olefins to form higher molecular weight compounds of branched-chain structure, was announced in 1938; in this process iso-octane was derived from isobutane and butylenes. This was followed by the announcement of thermal alkylation in 1939; neohexane, an alkylate of high-blending value for aviation gasoline, was produced by this process. Di-isopropyl, used for blending high-octane aviation fuel during the war, was produced in large quantities from ethylene and isobutane by a catalytic alkylation process placed in production in 1944. Isomerization, the rearrangement of hydrocarbons without change in molecular weight, was applied in the conversion of n-butane to isobutane.

In the field of pure synthetic hydrocarbon chemistry, one of the most interesting developments, announced in 1945, was the production of better than 99% pure "triptane" (2,2,3-trimethylbutane) in tank-car quantities. This hydrocarbon, the most highly-branched member of the heptane family, had apparently never been found in naturally-occurring petroleum; it possesses very superior antiknock characteristics and became an outstanding fuel.

Advances in petroleum exploration included topographic and aerial surveying, seismic reflection and gravimetric reconnaissance, and, to a lesser degree, magnetic and chemical survey methods. Considerable interest was shown in

soil gas exploration, where soil gas, existing either free or absorbed in soil particles, was analyzed for very small quantities of hydrocarbons; it was hoped that further development of this method would yield a means of locating oil and gas directly, as contrasted with geophysical methods which simply indicate stratigraphic structures favourable for the accumulation of petroleum. A similar method of exploration involved the examination of soil for certain types of bacteria associated with petroleum.

Important changes were noted in the drilling of oil wells. The cable tool or standard rig, inadequate for deep drilling, was displaced by the rotary drill whose use had been made practical by the development of special drilling muds. High-pressure formations were controlled by extra heavy muds, produced by treating clay slurry with barium sulfate. The application of colloid chemistry to mud treatment resulted in a variety of new muds possessing special viscosity, thixotropic and antiflocculating properties.

The quality of lubricating oils was improved through solvent extraction methods to remove certain compounds responsible for deterioration and, later, through chemical additives to improve oxidation resistance and reduce sludging, varnishing and corrosion. Turbine oils with superior stability and anti-rusting characteristics were also developed.

The manufacture of synthetic materials; other than fuels, from petroleum and natural gas, received a large amount of attention. Alcohols were manufactured from refinery-cracked gases by absorption in sulfuric acid followed by hydrolysis and purification. Acetone was produced from isopropyl alcohol and methyl ethyl ketone from secondary butyl alcohol, through catalytic dehydrogenation. Glycerol was synthesized from propylene. The large scale production of butadiene and styrene for use in synthetic rubber was an outstanding example of petroleum research during this period. (See also Petroleum.)

Rubber.—Foremost among the numerous technological advances of the rubber industry during the decade 1937–46 was the development of a number of synthetic rubber materials. As a result of this forward-looking program, the United States was well prepared to meet the emergency created in 1942 by the Japanese conquest of the major natural-rubber-supplying areas of the world. By 1946, synthetic rubber production had become a major U.S. industry with a capacity of about 1,150,000 long tons annually.

The first attempt to develop rubberlike materials had begun as early as 1875 with efforts to synthesize isoprene, the fundamental molecular constituent of natural rubber. Following the poor success of these pioneer efforts, attention was shifted to non-isoprene synthetics by the discovery in 1901 that both butadiene and dimethyl butadiene could be polymerized into rubberlike solids. Imperfect knowledge of the polymeric reaction impeded further progress, however, so it was not until 1931 that the first commercially-useful material, a polymer of monochlorobutadiene, was introduced under the name duprene (renamed neoprene or GR-M). By 1946, neoprene was being produced at a rate of about 70,000 long tons annually. Thiokol, an organic polysulphide, made its appearance at about the same time. This was followed by the development of koroseal, a rubberlike polymer obtained from vinyl chloride, in 1933.

After 1934 the development of substitutes for natural rubber proceeded at an accelerated rate. Among the first to appear were Buna S and Buna N, obtained by copolymerizing butadiene with styrene and acrylonitrile. Buna S



Rolling an experimental aluminum ingot into sheet

(also called GR-S) was the principal synthetic rubber produced in the United States in 1946; government-owned plants alone had a capacity of over 1,000,000 long tons per year. This material became used as general-purpose rubber in numerous products, including pneumatic tires for automotive vehicles and insulation for wire and cable. Buna N (also GR-N) was being produced entirely in privately-owned plants to the extent of about 18,000 long tons annually; it was used in self-sealing fuel tanks, bulletproof hose and mechanical goods where exceptional resistance to gasoline and oil was required.

A later development, butyl rubber, a copolymer of isobutylene and isoprene, was introduced in 1940; because of its superior impermeability to gases it was an effective material for inner tubes. The capacity for butyl rubber in the United States in 1946 was about 60,000 long tons per year.

A later development in the synthetic-rubber field was a new class of elastic materials derived from silicone resins. These materials, announced in 1945, were unaffected by temperatures ranging as high as 450°F. and as low as -70°F. They were used as gasket materials for aircraft engines, superchargers and searchlights.

Considerable progress was noted in the development of specialty rubber products. Lastex yarn, a product formed by covering rubber thread with cotton, silk and other materials, was made available for use in stretchable fabrics. Latex foam sponge was another specialty product possessing superior cushioning properties for lightweight, self-ventilating mattresses and seat cushions. A number of cyclized rubbers were developed for use as adhesives and paint bases. (See also Rubber.)

Plastics.—The development of the plastics industry, with large-scale production dating back only a few years, was one of the most impressive achievements of modern industrial research. According to the U.S. department of commerce, the production of synthetic resins in the United States increased from 1,644,000 lb. in 1921 to 784,137,000 lb. in 1944, an increase of approximately 47,500%. In addition to the extensive use of plastics in consumer goods, such as household appliances and personal effects, they found important application in many industrial processes as laminating and impregnating resins, adhesives, paper and textile coatings, paint bases and dielectric materials.

In 1846, Christian Friederich Schoenbein produced the first plastic, nitrocellulose, by treating cellulose fibres with nitric acid. This was a material of the thermoplastic type, that is, it does not undergo chemical change in forming and can be softened and reformed under heat and pressure. The commercial development of nitrocellulose began in the U.S. in 1868, when John Wesley Hyatt introduced the material under the name Celluloid. A similar material, cellulose acetate, discovered by Paul Schuetzenberger in 1865, was produced on a small scale in England about the turn of the century.

The remarkable progress of plastics in the 20th century was initiated in 1909, when Leo Baekeland developed the first thermosetting plastic, that is, a material which when formed undergoes chemical change and cannot be softened or reformed by further application of heat and pressure. This material, a product of phenol and formaldehyde, he called Bakelite. Vinyl acetate appeared in 1919, followed by furan in 1920, alkyd and aniline-formaldehyde in 1926, urea-formaldehyde in 1930, acrylic in 1931 and cellulose acetate butyrate in 1932.

During the decade 1937–46, a large number of new and improved plastic materials made their appearance. Among those which became commercially important were: ethyl cellulose (1937), polystyrene (1937), vinyl butyral (1937), melamine-formaldehyde (1939), vinylidene chloride (1939), allyl (1942) and polyethylene (1942). All these new materials possess exceptional properties of colourability, translucency, lightness, flexibility, toughness, adhesiveness, and resistance to electricity, chemicals, abrasion and shock.

A later development were the silicone resins, announced in 1943. Produced from silicon tetrachloride, magnesium and an alkyl halide, these materials were resistant to temperatures ranging as low as -75° F. and as high as 500°F. When used in conjunction with fibre glass as insulation for electric motors, they permitted as much as 50% reduction in weight for the same horsepower. They were also used as high-temperature gasket materials, notably in turbo-superchargers for aviation engines. (See also Plastics Industry.)

Glass.—Glass research entered a new era during the decade. The outstanding accomplishments of the previous decade (1927–1936) were the development of automatic machinery for blowing glass bottles, continuous rolling, grinding and polishing mills for plate glass; vertical drawing equipment for window glass and similar mechanical innovations. In contrast to this period of mechanical development, the later decade was largely a period of chemical development, with the major emphasis on the study of glass composition and its effect on physical properties.

"Shrunk" glass, with properties approaching fused quartz, was produced by separating ordinary glass into two phases, one consisting almost entirely of silica, the other of boric oxide, alkali and other soluble constituents. Leaching with acid gives a microscopically porous product consisting of approximately 96% silica, which on firing contracts about 35% in volume. This material is available in

the form of laboratory ware and high-strength sheets.

Laminated safety glass, introduced in 1927, underwent marked improvement during the decade 1937-46, a notable development being the use of vinyl plastic instead of celluloid or cellulose acetate, which suffered from discoloration and low-temperature embrittlement. The combination of vinyl plastic and plate glass not only provided a safety glass of high strength under all temperature conditions, but was sufficiently yielding to reduce passenger injuries on impact with it. A further development in safety glass, introduced during World War II, was flexseal glass in which the plastic interlayer extends beyond the edge of the glass and serves as a flexible mounting member; stresses caused by flexing the frame are not transferred to the glass itself. This type of mounting was used in aircraft where the incidence of breakage with conventional safety glass would have been prohibitive.

An electrically-conductive coating for anti-icing and antifogging glass was announced in 1946. When applied to laminated safety glass, the conductive coating was found to enhance the impact strength by maintaining the plastic interlayer within the optimum temperature range. The coating is completely transparent and durable; according to reported tests, there was no appreciable change in visual appearance or electrical properties after 70,000 cycles of wiping in the presence of water and dirt.

Nonreflecting surfaces were produced on glass by deposition of evaporated magnesium fluoride, the resulting film being in the order of 0.0000035 in. thick. The process was applied to lenses for range-finders, night binoculars and other optical equipment. Another glass development of importance in the optical field was the successful casting of a 200-in. pyrex mirror, the largest piece of glass ever made, for Mount Palomar observatory in California.

Among the numerous architectural applications of glass was the so-called solar house, with walls largely of glass, so oriented that the infrared rays of sunlight are excluded in summer and utilized for heating in winter. Other novel developments were prefabricated double-glass windows, curved plate glass for store fronts, tempered glass doors, hollow glass building block, heat-absorbing plate glass and high- and low-reflecting glasses. Glass fibre, woven in braid or cloth form, was used as insulation for electric motors and as fireproof drapes for places of entertainment and private homes. (See also GLASS.)

Power Production.—Certainly one of the most active and productive fields of industrial research during the decade was the development of new or better methods of generating power. Steam units were designed to operate in everlarger sizes and at increasingly higher temperatures and pressures. The highly efficient diesel engine became a major source of cheap power for industry and transportation (see Railroads). The continuous-flow gas turbine emerged from the theoretical stage and was applied to aircraft propulsion (see Aviation, Military). Nuclear energy, first utilized as a weapon, offered tremendous potentialities as a source of power for peace (see Atomic Bomb).

Advances in water power were stimulated by large government projects at Boulder dam, Tennessee valley, Bonneville, Grand Coulee and elsewhere. Approximately one-third of U.S. central-station capacity was now derived from water power. An important advance in water-turbine design was the Kaplan turbine, in which the pitch of the blades may be varied for efficient operation under a wider range of water heads than would be possible with fixed-pitch blading. The largest turbines of this type in the

United States were the 66,000-h.p. units at Bonneville dam. Francis reaction-type water wheels were built in sizes up to 108,000 h.p.

Despite the interest aroused by newer methods of power generation, steam continued to be the most important source of power for industrial uses. High-efficiency boilers, now often termed steam generators, were built with steaming capacities up to 1,000,000 lb. of steam per hour; convection surfaces were almost wholly replaced by radiant heating surfaces using vertical tubes which form the walls of the combustion space and in which steam is generated by rapid once-through flow before passing to the separator and superheater.

Steam turbines were developed for operation at progressively higher temperatures and pressures. Units of advanced design were capable of operating at inlet temperatures in the range of 950°F. to 1,000°F. and at pressures of 1,200 to 1,600 lb. per sq.in. These were built in sizes as large as 125,000 kw. and were, in general, used as topping or super-position units, that is, high-pressure turbines which exhaust to low-pressure turbines instead of directly to a condenser. Research was directed toward exploring still higher temperatures and pressures made possible by advances in metallurgy.

After 35 years of development, the mercury-steam plant became a reliable and efficient method of generating power. In a typical plant, mercury vapour at 1,000°F. and 180 lb. per sq.in. was expanded in a mercury turbine to about 485°F. and 1 lb. per sq.in.; it then passed to a mercury condenser-steam generator where it gave up its heat to steam at about 435°F. and 460 lb. per sq.in., which, after superheating, was expanded through a steam turbine to about 80°F. and 0.5 lb. per sq.in. The peak thermal efficiency of such a unit is about 37.5%. Difficulties with overheating of mercury boiler tubes caused by the non-wetting characteristics of mercury on steel were overcome by minute additions of magnesium and titanium as wetting agents. A major limitation on this type of plant was the high capital cost of mercury.

The emergence of the diesel engine as an important source of power for industrial and transportation uses was largely an accomplishment of the decade. The total power of diesel engines produced in the United States in 1937 amounted to only 2,025,000 h.p.; in 1944 production was in excess of 35,000,000 h.p. Noteworthy advances contributing to this growth were the two-stroke cycle with uniflow scavenging, the unit injector and high-speed (up to 2,000 r.p.m.) automotive-type diesels. Because of its very high efficiency (up to 36%), and its dependability, the diesel became a major factor in automotive and rail transportation, marine propulsion, municipal light and power plants, earth-moving and construction machinery and mining and oil-well drilling. During the war period, over 30,000,000 h.p. in diesels were used by the U.S. navy for landing ships and amphibious craft.

Progress in continuous-combustion gas turbines resulted largely from advances in axial-flow compressor design and high-temperature alloys. The conventional gas turbine unit consists essentially of a compressor in which air is compressed to 50 or 75 lb. per sq.in., a combustion space in which fuel is introduced and burned, and finally a turbine in which the potential energy of the hot combustion gases is converted into kinetic energy and subsequently into mechanical energy by passage through a suitable system of blading. Most of the turbine power output (60% to 75%) is absorbed in compressing the inlet air, and hence the net

output available for useful work is the difference between the total power generated by the turbine and the power absorbed by the compressor. The efficiency of the unit therefore depends on the efficiencies of the compressor and the turbine. At the same time, both power and efficiency depend on the temperature of the combustion gases entering the turbine, giving rise to a continuing need for improved alloys to withstand higher operating temperatures. Research in 1946 was directed toward finding alloys that could withstand temperatures of 1,200°F. and higher with acceptable creep and stress-rupture characteristics over long periods of time. Research was also directed toward the utilization of low-cost fuels such as pulverized coal and bunker fuels.

Investigations in nuclear power continued to be supervised by the government, in co-operation with several industrial laboratories, on the operation of a large atomic pilot plant at Oak Ridge, Tenn. Detailed results of this investigation were not yet available at the end of the decade, but it was generally agreed that the first useful atomic power plants would be large, that is, 100,000 to 200,000 kw., because of shielding requirements; and atomic power would be neither so cheap as to obsolesce existing prime movers nor so expensive as to preclude its consideration as a competitor to other forms of power. (See Atomic Bomb.)

Aircraft.—Progress in aeronautics during the decade was perhaps more spectacular than that in any other field. Aircraft were made larger (over 200 tons) and faster (over 600 m.p.h.) than ever before. Developments in air-frames and power plants, on which over-all aircraft progress was directly dependent, proceeded at a phenomenally rapid rate.

Parasitic drag, which seriously limits aircraft speed, was reduced as a result of improved understanding of air flow around air foils, or wings. Considerable progress was noted in approaching a true laminar-flow wing through advanced design and precise construction. There was a large amount of interest in so-called "flying wing" aircraft in which the function of the conventional tail assembly in providing stability and control was achieved by sweeping back the wings and providing them with "elevons" which could be used differentially as ailerons to control roll, or in unison to control pitch.

At speeds above 500 m.p.h., drag becomes an increasingly serious problem because of the compressibility of air; at sonic speed (about 760 m.p.h.) drag reaches a value many times greater than at subsonic speeds. At the end of the decade, aircraft had exceeded a speed of 600 m.p.h., and intensive efforts were being directed toward overcoming the difficulties associated with still higher speeds.

Increases in aircraft speeds toward the supersonic range provided a major stimulus for the development of new methods of propulsion: the turbo-jet engine, the propulsive duct and the liquid rocket motor. The efficiency of propeller propulsion, quite high at moderate subsonic speeds, falls off as speed is increased. The efficiency of jet propulsion, on the other hand, while low at low speeds, increases rapidly with increasing speed. Both jet and propeller are similar in principle: the propeller collects air, accelerates it by the action of the blades, and discharges it to the rear; the turbo-jet collects air through its intake, adds heat energy to it in a combustion chamber, and discharges the combustion gases through an orifice. Turbo-jet engines were limited by the inadequacies of high-temperature metals.

Research on helicopters, which can rise vertically from the ground, hover, descend vertically at will and fly horizontally at reasonably fast speeds, resulted in several sat-

isfactory designs. Interest in this type of aircraft resulted from its ability to land and take off in small spaces in congested areas, making it potentially useful as an air taxi for transporting passengers to and from airports and for possible private flying. (See Aviation, Civil; Aviation, Millitary.)

Automotive Research.—Indicative of the progress of automotive research were the average improvements in economy (ton-mi./gal.) of 47.8% and in performance (brake h.p./cu.in. displacement/ton-mi.) of 29.8% which were effected in volume-production motorcars between the years 1930 and 1942, when automotive production was halted by World War II.

A major trend in automotive research was toward improved riding and driving quality and increased safety. Independent coil spring suspension, the fluid clutch, automatic and semiautomatic transmissions, hypoid gears and increased weight contributed to the improvement of riding quality and easier driving. Among the more important safety developments were the all-steel body, the turret top, sealed-beam headlamps, vinyl safety glass and internal hydraulic brakes. Engine efficiency was increased by raising compression ratios (up 42.5% between 1930 and 1942), which was in turn made possible by higher octane fuels, improved bearing materials and bearing design, and better dynamic balancing and vibration suppression techniques.

In addition to improvements which it made in its own products, the automobile industry provided a major stimulus for the improvement of many products and raw materials of which it was the principal consumer. Co-operative research between automotive and supplier industries resulted in such advances as continuing improvements in the octane quality of fuels, correction of the sludging and corrosive tendencies of lubricants, improvements in the deepdrawing quality of steel sheets, improvements in low-viscosity cellulose nitrate lacquers and other finishes, and the development of progressive dies and improved machine tools. (See also Automobile Industry.)

Railroads.—The railroads were very active in investigating the possibilities offered by various new types of prime movers as power plants for locomotives. Attention was given to improved steam-cylinder locomotives and steam turbine locomotives, diesel locomotives and gas-turbine locomotives. At the same time, there was an increasing emphasis on improved rolling stock, sleeper accommodations, and other developments contributing to passenger service and comfort.

Following the introduction of the first diesel-powered streamlined train (the "Pioneer Zephyr") in 1934, the diesel locomotive rapidly grew to a commanding position in main-line service. Costing more than twice as much per h.p. as the coal-fired steam locomotive, the diesel's higher availability and higher efficiency (approximately 36% as compared to approximately 8% for steam) made it indispensable for high-speed passenger service and for freight and switching. Because of its very high availability in continuous service, one diesel locomotive may often do the work of several steam locomotives. In 1941, when the manufacture of passenger locomotives was halted by the war, there were nearly 200 diesel passenger locomotives in main-line service. The first diesel freight locomotive was demonstrated in 1939; by 1946 there were nearly 300, plus over 80 combination freight and passenger locomotives. In 1936 there were approximately 175 diesel switchers; in 1946, over 2,000.

Development of the steam-turbine locomotive was impeded for many years by condenser difficulties, that is, the difficulty of building a suitably compact condenser to re-

cover boiler water and provide the necessary vacuum at the turbine exhaust. Several experimental locomotives attempting to overcome this difficulty were designed and built during the decade. Attention was also given to the possibility of using non-condensing turbine drives for locomotives.

Interest in the gas turbine, which requires no boiler or condenser, resulted from its potential high efficiency. While these efficiencies had not yet been realized in practice (see above, under Power Production), a 2,200-h.p. gas-turbineelectric locomotive, giving approximately 18% thermal efficiency, had been in operation on the Swiss Federal railways since 1939. Several manufacturers in the United States prepared designs for gas-turbine locomotives, among the most interesting of which was one proposing to use powdered coal as fuel. In this design, coal was to be crushed and atomized to produce particle sizes comparable to lamp black for burning in a vortex-type combustion chamber; the hot combustion gases would pass through a centrifugal ash precipitator in which 95% of the fly-ash was removed; the clean combustion gases would then be expanded in the gas turbine.

The introduction of heavier equipment and faster schedules, made possible by the diesel locomotive, necessitated extensive improvements in rails and roadbeds. The quality of rail steel underwent steady improvement. Methods of detecting rail fissures were developed and placed in use. End batter was reduced by the introduction of hardened 45-degree lapped joints. The number of rail ends was minimized by using continuous rail lengths over a mile long. Processes for hardening rails over their entire length were under investigation; one such process using watermist quenching was in limited use in Europe. A U.S. process, in which the entire rail is water-quenched and normalized, raised the Brinell hardness from 300 to 360 and reduced wear by 45%. (See also RAILROADS.)

Radio and Television.—A continuing trend of radio development was its expansion into increasingly larger portions of the frequency spectrum. This trend, a normal result of the increase in transmitting facilities, was intensified during the decade 1937–46 by the wide-band requirements of frequency modulation (150 kilocycles) and television (over 4 megacycles). Such extremely large bandwidth requirements were accommodated by moving continually higher into the ultrahigh-frequency region.

Formerly, amplitude modulation (A.M.) was the only method employed for radio transmission; frequency modulation (F.M.) was thought to have no outstanding advantage, since the methods of reception were so inefficient that they more than offset the higher efficiency of transmission which resulted from constant-carrier amplitude. With the recognition in 1936 that radio interference from noise was mainly due to amplitude modulation of the carrier, however, interest in F.M. development was greatly stimulated, and it progressed with such rapidity that in 1940 the Federal Communications commission assigned the 42-50 megacycle range to F.M. broadcasting, permitting the accommodation of 40 high-fidelity transmissions separated by 200 kilocycles each. Among the advantages of F.M. over A.M. are higher fidelity, lower transmission power at full modulation, low-level modulation, and less amplitude compression. The disadvantages are unsatisfactory transmission over long ranges requiring multiple ricochets between ionosphere and earth, and a tendency to "capture" signals from other F.M. transmitters operating at the same carrier frequency. (See RADIO.)

Following the development in 1923 of electronic scanning devices (see *Electronics*, following) for modulating a carrier wave with video signals, television made such rapid strides that by 1946 it had reached a state of potential commercialization. By 1940, the number of experimental television broadcasting stations, operating mostly in the New York area, had grown to 23. Authority to begin commercial television broadcasting was granted by the Federal Communications commission on July 1, 1941, but further commercial progress was impeded by U.S. participation in the war. Colour television was demonstrated in 1940 and placed in operation in the New York area in 1941. (See Television.)

Radar (radio detection and ranging) was one of radio's most spectacular wartime applications. First installed on the battleship U.S.S. "New York" in 1938, radar was used to determine the direction and distance of foreign bodies by emitting short-wave pulses reflected back to the sending point after striking a solid object. Direction is obtained directly, while distance is computed from the time lag between pulse emission and reception. The principal advantages of radar over visual and sound detection systems are greater range and accuracy, ability to function in darkness and adverse weather, and vastly increased sensitivity. During World War II, radar was widely used on land to locate aircraft and offshore vessels; on shipboard to determine the position of other ships, aircraft and landmarks; and in aircraft as an absolute altimeter (introduced in 1938) and to locate other aircraft. A proposed peacetime application was in ship and aircraft navigation; several types of equipment were available for this purpose.

Other types of war equipment making use of the reflecting properties of electromagnetic and elastomechanical waves were loran (an aid to long-range navigation), shoran (a precision blind-bombing system) and sonar (a supersonic submarine-locating device). (See also RADAR.)

Electronics.—During the decade, electronics assumed an increasingly important role in modern life, and the spectacular development of new electronic devices continued with unabated progress. In addition to their usefulness in all phases of communication, they became essential in many important industrial processes. As radio-thermic devices, they became invaluable in induction and dielectric heating. They extended the field of resistance-welding. They were introduced to level elevators, control the register of high-speed printing presses, stop papermaking machines at the precise instant before paper fibres break, open and close doors and ring burglar alarms. As rectifiers they supplied 75% of the direct current used by the aluminum and magnesium industries. They sort and count merchandise, match colours, spot pin holes in thin sheets and films, locate occlusions in heavy castings, and gauge the thickness of materials to a millionth of an inch.

A major stimulus to the development of new vacuumtube devices was afforded by the extension of radio into the ultrahigh-frequency portion of the spectra. This resulted in a number of new thermionic devices working on principles which are free of some of the defects suffered by negative-grid tubes at these higher frequencies.

When used as an oscillator, the negative-grid tube becomes progressively less efficient as frequency is increased. At ultrahigh-frequencies, therefore, it was replaced to a very large extent by the positive-grid oscillator, the magnetron and the klystron. The first two of these devices are excellent oscillators but are incapable of amplification. The klystron, using the principle of velocity variation, may

be used either as a high-frequency oscillator or as a high-frequency amplifier.

In high-frequency amplification, the tendency of negative-grid tubes to generate extraneous frequencies by feedback necessitated the development of devices for neutralizing this effect, one such device being the push-pull pentode with two tube structures in one envelope. Amplification by beam-power tubes, an application of electron optics to thermionics, received considerable attention because of its high efficiency. Promising progress was noted also in the development of wide-band amplifier tubes for television and broad-band carrier systems.

Important developments in secondary-emission and photoelectric-emission devices resulted from the need for efficient pick-up tubes for television transmission. Four types of television pick-up tubes were available in 1946: the image dissector, the iconoscope, the super-emitron (or image iconoscope) and the orthicon. On the receiving end, numerous detailed improvements were made in the cathode-ray picture tube, notably the electron gun for producing accurately-focused high-current electron beams and improved fluorescent materials. Considerable interest was centred on the problem of developing a satisfactory brightimage tube capable of projecting television images on a large screen.

Concurrent with the development of new thermionic devices, there was a remarkable advance in circuit techniques. As frequencies increase, the lumped inductances and capacitances of resonance circuits tend to decrease, and the characteristics of the connecting leads assume an increasingly important role in circuit performance. At ultrahigh frequencies, therefore, it was found necessary to abandon lumped circuit constants and to use instead the resonance properties of parallel-wire or coaxial transmission lines. At still higher frequencies, even this type of circuit becomes inefficient and use must be made of the resonance properties of conducting cavities, the frequency then being determined by the geometry of the cavity. This technique found wide application in the newer thermionic devices; the elements of the velocity-modulation and klystron tubes, for example, were set directly into such

One of the most spectacular applications of electronics was the electron microscope, making possible visual magnifications as great as 30,000 diameters, compared to 2,000 diameters for the optical microscope and 3,000 diameters for the ultra-violet ray microscope. This device overcame the limitation imposed on optical microscopes by the wave length of visible light (0.0004 to 0.0008 mm.) which precluded observation of particles separated by a distance of less than 0.0001 mm. By extending the range of observation to particles separated by as little as 0.000002 mm., the electron microscope made it possible to observe large molecules; theoretically it should be possible to see atoms. Important applications were found in the study of viruses, colloids, plastics, catalyzers, surface chemistry, grain structure of metals, paint pigments, ceramics and textiles.

Developments in X-ray equipment extended the range of possible sizes up to and including 2,000,000 volts. In 1946 there were five 2,000,000-volt industrial X-ray units in the United States; with units of this size, satisfactory exposures could be made through 12 in. of steel in about 2 hours. Such equipment became invaluable for inspecting metals and welds in heavy structures such as armour plate, large castings and thick-walled pressure vessels. (See Electronics; X-Ray.)

Textiles.—The creation of a large number of synthetic fibres was one of the outstanding accomplishments of in-

dustrial research during the decade. New and unusual fabrics were produced from a variety of raw materials—from plastics, casein (milk), rubber and glass. New sources of textile fibres were discovered in redwood bark, asbestos, ramie (Boehemeria nivea) and other hitherto-unused natural materials.

Nylon, announced in 1938, became a preferred fibre for women's stockings, toothbrush bristles and numerous other products. The result of more than ten years of chemical research, nylon is synthetic polyamide derived basically from coal, water and air. Some 80,000,000 lbs. were used for military purposes during World War II, notably in parachutes, cord for aeroplane tires, glider tow and pick-up ropes, and rigging for barrage balloons.

New developments in rayon included a process, announced in 1942, for drawing rayon filaments to a diameter of only 0.0001 in. or one-eighth the weight of silk. Yarn, formed by twisting 160 such filaments, was available. Another new process, announced in 1942, produced spun rayon yarn by tow-to-top conversion of continuous filaments at one-fifth the cost of previous processes.

Noteworthy among the later protective treatments for textiles were the use of soluble aluminum acetates and several patented preparations as permanent water-repellents, ammonium sulphamate as a flameproofing agent, and sulfuryl chloride as a nonshrinking agent for all-wool blankets and socks. (See also Textile Industry.)

Wood Products.—Considerable progress was noted in developing antiseptic and preservative treatments for protecting wood products against discoloration, decay by fungi and bacteria, and attack by insects. Sap stain and mould on freshly-cut lumber were minimized by chlorinated phenol treatments. A method of protecting lumber against fungi and bacterial decay was developed, using a 5% solution of pentachlorphenol in light oil. This treatment was said to have provided protection against both decay and insect attack on wood specimens buried in moist soil for as long as ten years.

Improvements in plywood, made by bonding together thin laminations of wood and, in some cases, metal sheets, were greatly stimulated by the large wartime demand for these materials. Synthetic-resin bonded plywood virtually replaced the older animal and vegetable-glue bonded materials. Impregnated plywood is an unusually hard and durable material in which the bonding resin permeates the cells of the wood. Dielectric heating provided an improved means of obtaining high temperatures in the centre resin layers without damaging or overcuring the outer layers.

Among the many noteworthy developments in paper was the development of a satisfactory process for obtaining wood pulp from southern pine sapwood and the commercialization of a number of chemical treatments for providing superior strength and wetting resistance to paper.

Agriculture.—The spectacular increase in farm productivity which was made possible by the introduction of farm machinery during the 19th century was continued by the engineer and the chemist. The decade 1937–46, witnessed numerous improvements in agricultural mechanization, in the use of chemicals to promote crop growth and combat insect and weed pests, and in the scientific control of seed strains and soil conditions.

Noteworthy developments in agricultural machinery were stimulated by the steady transition of farm workers from agriculture to other industries. Equipment became available for the complete mechanization of the sugar beet industry; seed processors, precision planters, mechanical blockers and mechanical harvesters made possible an increase in productivity of nearly 200% in terms of the man-

hours required to produce a given crop. Similar progress was noted in the cotton industry. Mechanical cotton pickers capable of picking up to one bale per hour were in experimental use in California and the Mississippi delta region. The production of hay, one of the largest crops in the United States, was mechanized from start to finish.

Many of the most striking developments in agriculture during the decade resulted from the application of chemistry to farm problems. Soil fumigation, a means of combating root-attacking pests, was applied successfully in many areas. Mechanical cultivation was facilitated by coating or pelleting certain kinds of seeds, such as fine sugar beet seeds.

Herbicides, fungicides and insecticides received an increasing amount of attention. DDT (dichloro-diphenyltrichloroethane), which was used in enormous quantities during the war for mosquito control, was one of a large number of new insecticides available for insect control. Other chemicals, such as 2,4-D (2,4-dichlorophenoxyacetic acid), were used as selective weed killers. Treatment with 2,4-D was effective in eradicating broad-leaf lawn weeds such as plantain, buckhorn, ground ivy, chicory and dandelion. Ammonium sulphamate was found to be effective against poison ivy and many other noxious weeds. (See also Agriculture; Chemurgy; Entomology.)

Food.—The co-operative work of the chemist, chemical engineer, bacteriologist and biologist resulted in noteworthy contributions to the packing house industry. The nutritive value of many foods was enhanced by improved preservative treatments and by vitamin and protein enrichment; dehydration and quick-freezing made possible greater stability of perishable food-stuffs in storage and reduced weight and bulk in shipment; pharmaceuticals and other valuable by-products were obtained from food materials formerly classed as waste products.

Difficulties with freezing, caused by massive ice crystals which rupture delicate cells, were overcome by the introduction of quick-freezing methods. In this process, freezing is accomplished very rapidly so that the ice crystals are intercellular; on thawing the water is reabsorbed by the cell material. Fish, meat, poultry, fruits and vegetables became regularly available in quick-frozen form. Frozen cooked foods, such as pork and beans, spaghetti with tomato sauce, and corned beef hash, were a new development.

Dried foods, such as powdered milk and eggs, had been staple commodities for many years. Methods were developed during the decade to control dehydration so as to make it applicable to a large number of food products. Many, but not all, varieties of fruits and vegetables could be satisfactorily dehydrated. In general, the fruit or vegetable is peeled, then cut or shredded to preferred size. Chemical treatment or blanching is usually required to halt enzyme action so as to preserve vitamin content and retard discoloration. The prepared fruit or vegetable is then spread on trays and dried by countercurrents of air at about 140°F.

Considerable progress was noted in utilizing many valuable hormones and biochemical catalysts derived from the glands of slaughtered animals. Growth, gonadotroptic and lactogenic factors were separated in concentrated form from the anterior lobe of the pituitary. Insulin and trypsin from the pancreas and pepsin from the gastric mucosa were prepared in pure crystal form. Vitamin C was extracted from suprarenals, which, formerly waste, became a potentially important part of the slaughtering industry.

Famine conditions in many sections of the world during and immediately after World War II focused attention on the need for large scale methods of producing emergency proteins. Yeast, alfalfa and other grass roots, cat tail rush (Typha), and seaweed were investigated as possible sources of large tonnage emergency foods. Considerable research was devoted to the harvesting and processing of plankton, microscopic organisms in ocean surface waters this was apparently the largest unused source of food available for men and animals (See also Dietetics)

Pharmaceutical Research.—The achievements of industrial research in the pharmaceutical field particularly in chemotherapy, were truly epoch making sulfa drugs, penicillin, synthetic antimalarials and many other new compounds of therapeutic value were either discovered or brought to large scale clinical usefulness during the decade 1937–46 Equally impressive progress was noted in the synthesis of vitamins, in the extraction of hormones and other glandular derivatives, and in the processing of blood plasma.

The revival of interest in chemotherapy stemmed from the discovery that sulfanilamide, announced in 1935, is an effective antibacterial agent in the treatment of infections caused by streptococci, meningococci and gonococci Ef forts to develop a sulfa drug which would also be effective against pneumococci led to the discovery of sulfapyridine in 1938, followed by the less nauseating sulfathiazole in 1939, and the still less nauseating sulfadiazine in 1940. All three of these compounds are effective against streptococci and meningococci as well as pneumococci Sulfaguanidine, an nounced in 1940, differs from the other well known sulfa drugs in respect to its lower absorption in the intestinal tract and proved useful in treating intestinal infections such as bacıllary dysentery The mode of action of all sulfa compounds, of which there were some 2 000 under investigation at the end of the decade, appears to be bac teriostatic (rendering the bacteria vulnerable to white blood cell attack) rather than bactericidal

Although the antibacterial effect of the green mould Penicillium notatum had been announced by Alexander Fleming as early as 1929, it was not until 1940 that the tremendous therapeutic value of this substance was generally recognized Placed in production by several US pharma ceutical houses in 1941, penicillin rapidly grew to major importance as a treatment for infections caused by sta phylococci, pneumococci, streptococci gonococci and meningococci Penicillin is a complex mixture of several active principles, two of these, penicillins F and G, were isolated in 1943, a third, penicillin X was isolated in 1944, and a fourth, penicillin K, in 1945 Research at the end of the decade was directed toward obtaining improved yields from mould cultures, studying methods of synthesizing the active principles, and investigating the antibacterial possi bilities of some of the 100,000 other known moulds and fung: One of the most promising of the newer mould antibacterials was streptomycin, under active investigation at the decade's end

The emergency created by the Japanese conquest of the cinchona plantations of Bandang, Java, acted as a tre mendous impetus to the long pursued search for synthetic cinchona alkaloids and other antimalarials. Starting with two known substitutes for quinine, plasmochin for the treatment of fulciparum malaria and atabrine (or quinacrine) for the treatment of vivax malaria, the pharmaceutical industry, in co operation with university investigators and under the direction of the Office of Scientific Research

and Development undertook a large scale wartime antimalarial research program involving the synthesis and investigation of more than 14 000 compounds. Some of the practical results of this tremendous program were the development of improved production processes and clinical techniques for atabrine, the discovery of a number of new antimalarials, notably several members of the 4 aminoquinoline series, and the exploration of the 8 aminoquinoline series as a possible source of nontoxic curative agents. Although OSRD sponsorship terminated at the end of the war, the antimalarial research program was actively continued by a number of pharmaceutical houses.

The success of biochemists in isolating and synthesizing vitamins was particularly noteworthy. During the decade the existence of vitamin B₀ was established, vitamins B₀. E, and G were isolated, and vitamins A, B₁, B₀, and K were successfully synthesized. Vitamin B₀ the antiacro dynia factor, was discovered in 1936, isolated in pure form in 1938, and synthesized as pyriodoxin in 1939. Vitamin E, established in 1922 as an antisterility factor was identified as alpha tocopherol in 1936 and synthesized in 1938 beta tocopherol, gamma tocopherol and alpha tocoquinone were also found to possess vitamin E potency. Nicotinic acid amide, synthesized by oxidizing nicotine as early as 1867, was shown to be the active principle of vitamin G, the antipellagra factor, in 1937.

Interest in plasma transfusion for treating traumatic shock caused by wounds or burns was greatly stimulated by World War II While direct transfusion of whole blood was practised on a limited scale during World War I, it was not until 1932, when it was discovered that blood could be preserved for six hours or more by refrigeration that the practical development of transfusion became pos sible During the decade 1937-46, interest centred largely on plasma, the supernatant fluid component of blood which unlike whole blood can be stored in frozen form for as long as five years. In addition, plasma need not be donor typed, does not add to haemoconcentration is freer from reactions than whole blood, and may be adminis tered in larger quantities or in concentrated form if de sired A satisfactory method of packaging dried plasma so as to make it available for immediate use under combat conditions, was developed during World War II Dried plasma, which can be reconstituted by the addition of dis tilled water, may be stored indefinitely. At the end of the decade, research was concentrated on investigating the properties and uses of pure plasma proteins (See also Bio CHEMISTRY, CHEMOTHERAPY, MEDICINE, VITAMINS)

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Infantile Paralysis

Infantile paralysis (poliomyelitis) is an infectious communicable disease caused by a specific virus. The patient with the malady may or may not manifest paralysis of muscles, and, in addition, some evidence appeared during the decade 1937–46 to indicate that certain individuals may harbour the virus without showing any recognizable symptoms of the disease. Infantile paralysis has occurred throughout the world, but severe epidemics of the disease are more common in the temperate zones where they usually occur during the late summer. That cases of

infantile paralysis occur throughout the year, even during the winter months, was confirmed by recovery of the virus from patients with the disease.

Diagnosis.—The early symptoms of infantile paralysis are similar to those of the contagious diseases common to childhood, viz., fever, headache, nausea and vomiting. Frequently the patient is quite restless and exhibits a marked apprehension. Later on there may be present muscle "spasm," weakness and pain—the latter especially on motion. Muscle "spasm" is an abnormal tenseness, firmness or hardness of muscles believed by many to be peculiar to infantile paralysis. Still later flaccid paralysis may be present, although it became known that paralysis is by no means a constant accompaniment of the disease.

Since a specific laboratory test had not been developed by the end of 1946, a diagnosis of infantile paralysis had to depend on the array of clinical symptoms and signs, together with certain laboratory procedures to rule out other virus diseases. The diagnosis could be strengthened materially by recovery of the virus from the patient's throat or bowel. However, this test was not practical for an ordinary diagnostic laboratory because it was very expensive and time-consuming, and especially because the interpretation of results required considerable technical skill and experience.

Pathology.-It was believed originally that the virus of infantile paralysis invades the brain and spinal cord only in the paralytic form of the disease. A number of experimental studies during the decade 1937-46, however, indicated that the virus probably invades the central nervous tissues in both the paralytic and the nonparalytic forms of the malady. The essential difference between the two forms of the disease is that in the latter an equilibrium, the mechanism of which was unknown by 1946, is soon established between the virus and the central nervous tissues of the host. This equilibrium limits virus invasion rather abruptly, with little damage to nerve cells; or perhaps the virus is induced to follow pathways that are so scattered as to leave undamaged, in any one area of the brain or spinal cord, sufficient numbers of nerve cells to carry out normal activity.

It was formerly believed that the pathology of infantile paralysis was destruction of the large motor (anterior horn) cells of the spinal cord only. Studies during the decade indicated that, whereas the virus does have a particular affinity for these cells and that destruction of these cells is responsible ultimately for the disability characteristic of the disease, other nerve cells in the brain, spinal cord and peripheral ganglia are also susceptible and that the symptomatology of the disease cannot be explained adequately on the basis of damage to the large motor cells alone. It was shown experimentally in monkeys that muscle "spasm" may be evident in the extremities at a time prior to the appearance of virus in the spinal cord. Some investigators thought that nerve cell damage was secondary to alterations in the blood vessels and in the intercellular fluids of the brain and spinal cord. By 1946, however, after the experimental disease had been studied in monkeys and in chimpanzees, it was generally believed that the virus acts directly upon the nerve cell. Several investigators reported that the virus of poliomyelitis interferes with the metabolism of glucose by the nervous tissues. This observation, if shown to be true by continuing experimentation, might be interpreted to indicate that the virus destroys the nerve cell by interfering with its source of energy.

The Virus.—The virus which causes infantile paralysis is so small that it readily passes through the finest filters—filters which easily hold back the smallest bacteria. By

1946, the virus particle had not yet been identified with certainty by means of the electron microscope.

In patients with the disease, the virus can be recovered most readily from the stools and from the secretions of the throat. It has been recovered from the throat only early in the disease, usually for a week at most, and with much less frequency than from the stools, from which it has been recovered for six or eight weeks and even longer.

Experimental studies showed that the quantity of the virus in the brain and spinal cord is highest on the day of paralysis and is somewhat less on the preceding and following days. The quantity diminishes rapidly after onset of paralysis, and the virus tends to disappear from the brain and spinal cord by the second week.

Several different strains of the virus of infantile paralysis had been isolated by 1946. Although each strain is capable of producing the disease, they differ from one another in degree of virulence, in their capacities to invade the brain and spinal cord after they are injected into various parts of the body, in their abilities to induce the disease in different experimental animals, and in their abilities to stimulate the formation of antibodies which are found in the blood and which are capable of inactivating the virus.

Relatively little was known in 1946 regarding the physical and chemical structure of the virus particle. Laboratory methods by which the virus could be concentrated and purified were necessary. One development, the ultracentrifuge, enabled investigators to concentrate and remove most, if not all, of the virus from the various materials in which it is found. However, methods had not yet been found by which the virus could be purified completely.

Investigators had long been handicapped by their failure to obtain multiplication of the virus except in living nerve cells. One of the most intriguing developments was the possibility that the virus may grow in embryonated eggs. If the results of these preliminary studies were borne out by further investigations, workers would have a method whereby large quantities of the virus could be produced cheaply and with much less effort. More important, this procedure would make it possible for investigators to study in a relatively simple and easily controllable medium the various agents (drugs and serums) which might influence multiplication of the virus.

Portal of Entry.—The experimental disease can be induced most readily in a susceptible laboratory animal (chimpanzee, monkey, cotton rat or Swiss mouse) by injecting the virus directly into the brain. It may also, under certain conditions, be induced by dropping the virus into the nostrils, by feeding, by injecting the virus into or beneath the skin, etc. Infection by these latter methods, however, is less certain and apparently is dependent upon the species of animal and upon the strain of virus employed. The upper respiratory and alimentary tracts were cited as the most likely points of entrance for the virus in man.

Formerly, most investigators had believed that in man the nose was the most important portal of entry for the virus. The following observations were cited in support of this concept: (1) infection could easily be induced in the monkey by dropping the virus into the nostrils; (2) following instillation of the virus into the nose, the virus was found in the olfactory bulbs before it was found in other portions of the brain; (3) the virus was recovered from the naso-pharynx of human beings suffering from the disease; (4) infection could not be induced by dropping virus into the nostrils of monkeys if their olfactory tracts had previ-

ously been cut or it then olfactory mucous membranes had been "blocked" by the use of certain chemicals, and (5) induction of the experimental disease in the commonly employed Macacus rhesus monkey was found to be exceedingly difficult if the virus was administered by any normal route other than the nasal.

The results of many investigations, however, led the majority of investigators to believe that in man the virus of infantile paralysis more commonly invades the brain and spinal cord by way of the upper part (mouth and pharynx) of the alimentary tract. This change in point of view resulted from the following observations: (1) the virus had been recovered from the stools of patients and contacts, particularly those under eight years of age (in one such case the virus was recovered from the stools 19 days prior to the onset of the disease); (2) the virus, or lesions believed to be caused by the virus, had been found in the ganglia of certain nerves which connect the brain and spinal cord with various parts of the alimentary tract; whereas the virus, or lesions believed to be caused by the virus, had only rarely been found in the olfactory bulbs of fatal cases of the disease in man; (3) it had been shown that chimpanzees, and also certain species of monkeys, contract the disease if the virus is administered by mouth, and that cutting of the olfactory tracts prior to feeding the virus did not prevent the disease; and (4) it had been shown that removal of the tonsils and adenoids increases susceptibility to infantile paralysis; of especial importance was the finding that when the disease strikes such individuals there is an increased tendency to develop the bulbar form. Some histopathological evidence was presented strongly suggesting that in man the virus may very commonly invade the body through the mucous membranes of the mouth and throat and subsequently gain entrance to the brain by way of certain of the cranial nerves.

Factors Affecting Resistance.—As in the case of other contagious diseases, three kinds of resistance, viz., natural, actively acquired and passively acquired, are recognized in infantile paralysis.

Natural resistance does not depend upon previous contact with the virus. In infantile paralysis this type of resistance appears to be dependent upon such factors as species, sex, heredity, nutrition and the physiological state of the host.

It was shown during the decade that mice exhibit an increased resistance to the virus of infantile paralysis if they have previously been fed a diet deficient in certain vitamins, particularly vitamin B₁ (thiamin), or a diet deficient in calories alone. It was difficult to relate these findings to man because experimental studies on cotton rats and monkeys had failed to reveal a similar relationship.

That metabolic alterations of the nerve cell could alter markedly its susceptibility to the virus was evidenced by the observations of Howard A. Howe and David Bodian. These investigators cut the processes of the nerve cells in the spinal cord which supply the muscles of the lower extremity. It was found that these cells were always susceptible to the effects of the virus of infantile paralysis except during the period when they were regenerating their severed processes. This observation was of particular importance because it was easy to reproduce in these cells the metabolic state which enables them to resist the virus. Now, for the first time, it was possible to begin detailed physiological and chemical studies designed to bring forth the exact mechanism by which nerve cells could be made to resist the virus.

Actively acquired resistance is that which results from: (1) an attack of the disease or (2) the injection of vaccines.

It was formerly believed that one attack of the disease resulted in life-long immunity to subsequent attacks. However, a number of reports during the decade 1937-46 indicated that this was not necessarily true. Many investigators came to believe that experimental animals or man may sustain second and even third attacks of the disease if the central nervous tissues are attacked by a strain of the virus different from that causing the first attack, or if the same or different strains of the virus can reach susceptible nerve cells which had not previously been in contact with the virus. With regard to this latter possibility, Thomas M. Rivers pointed out that "... it is possible that the so-called actively acquired immunity to infantile paralysis is due to the fact that most, if not all, of the susceptible cells at the usual portal of entry of the virus are destroyed during one frank attack of the disease, none being left to support the activity of virus coming that way later. However, if the virus should use a portal of entry different from that employed in the first attack, a second attack might occur." (Thomas M. Rivers, "Immunological and Serological Phenomena in Poliomyelitis," in Infantile Paralysis: A Symposium, New York, National Foundation for Infantile Paralysis, Inc., 1941, pp. 57-82.)

A great many attempts were made during the decade to develop a vaccine against infantile paralysis. The story of this work was filled with tragedy and disappointment. No vaccine was developed for man which was both safe and effective. Late in the decade, two investigators prepared a vaccine by the ultraviolet light method, which was remarkably effective in mice. Whether this vaccine could ever be used to prevent the disease in man was still problematic.

It had been known for some time that human beings and monkeys convalescent from an attack of infantile paralysis may develop in their blood antibodies which are able to neutralize the virus. It was only natural to believe that injections of immune serum or the globulin fraction of immune serum (passively acquired resistance) might enable an individual to resist infection with the virus, or that such injections might even be effective in the treatment of a frank attack of the disease. Up to the end of the decade, however, evidence of such protection, as judged by the results of carefully controlled clinical trials, had failed to support this hypothesis.

Possibly undue fatigue, excessive exercise and sudden chilling would not alter susceptibility to the virus, but there was some evidence to indicate that, if the virus is already present within the body, these stresses may provoke the more serious forms of the disease in an individual who might otherwise escape paralysis.

Transmission of the Virus.—The exact mechanism by which infantile paralysis is spread also remained unknown in 1946. It was recognized that the virus is widespread in nature. However, it would appear that the largest and most constant reservoir of the virus is man himself. The virus had been isolated from domestic sewage upon several occasions, especially the sewage from localities in which cases of the disease were occurring. It had also been isolated from pools of flies captured in the vicinity of cases of the disease.

For a time it was believed by many investigators that the common housefly played an important role in the spread of the disease. This concept was supported by the results of one experiment in which the disease was produced in chimpanzees by feeding these animals foods which had been freely exposed to flies in the home of a patient with



Sister Kenny, Australian inventor of the famed treatment for infantile paralysis, went to the U.S. in 1940 to teach her method to U.S. doctors and nurses. Here she is shown at a demonstration in 1942 exercising a victim's limb to restore muscular activity

the disease. While it was undoubtedly true that the fly may play a part in the mechanical conveyance of virus from faecal material to food, the weight of evidence indicated that the disease most often is transmitted by intimate contact between a susceptible person and a "healthy carrier" of the virus or a patient with the disease. Although the nature of this contact was not clear, contamination by the excretions of the bowel and/or the secretions of the pharynx were strong possibilities.

That this problem had not been solved was due in most part to the failure to develop a more sensitive test for the virus. The only such test available, i.e., inoculation of suspected material into the brain of the monkey, was of importance only when a positive result was obtained. It was

generally agreed that this test was unreliable for detecting small quantities of the virus; and a test sensitive to these small quantities was required to solve the problem.

Treatment.—While no drug, serum or vaccine had been found to be effective, the decade 1937–46 witnessed a revision in the treatment of patients with infantile paralysis. Formerly treatment during the late acute and early convalescent periods stressed rest and the use of those procedures (splints and casts) which were designed to maintain the affected parts of the body at rest in their normal position.

Infantile paralysis is a disease which affects muscles secondarily by interrupting their nerve supply. When a muscle is deprived of its nerve, the muscle progressively wastes away until finally it is no longer able to function even if its nerve subsequently becomes re-established. The maintenance of muscles in good condition thus assumed primary importance in the modern treatment of infantile paralysis.

At the end of the decade 1937-46, treatment was as follows: The patient was hospitalized as soon as possible and applications of moist heat were begun immediately to all parts of the body showing evidence of muscle "spasm," tenderness and pain. These applications were continued until such time as muscle "spasm", and pain had disappeared. All affected parts were subjected regularly to passive motion within the limits which could be tolerated without pain. Upon the disappearance of pain the patient was encouraged to exercise the affected parts regularlycare being taken to prevent fatigue and to insure that movements were performed by the appropriate muscles acting in proper co-ordination. This treatment resulted in improvement in the condition of the muscles. Experimental studies in progress on the effects of massage, electrical stimulation and the oscillating bed, offered considerable hope that the rate of recovery would be increased, that the mechanical handicaps resulting from contractures and muscle imbalances would be further minimized and that re-establishment of useful function would be greatly facilitated.

The decade witnessed real improvement in surgical procedures applicable to infantile paralysis. One of the more crippling of the aftereffects of this disease had been a result of unequal growth of the lower extremities. Procedures were devised to correct this condition, but until late in the decade full correction was seldom obtained because it was impossible to predict accurately the extent to which the two limbs would grow. As a result of a long-term study a prediction chart was developed which enabled the surgeon to perform the operation at such a time that full correction was usually obtained.

Of special interest to both the scientist and the victim of the disease was the creation of The National Foundation for Infantile Paralysis. This organization not only supplied the money to enable scientists to continue their efforts to eradicate the disease, but also enabled every victim of the disease—regardless of race, creed or colour—to obtain the best available medical and hospital care.

(H. M. Wr.)

The Kenny Treatment.—In 1940 Sister Elizabeth Kenny travelled to the United States, bringing with her a technique for the treatment of early poliomyelitis which she had developed in Australia. Previous criticisms of her method both in Australia and Great Britain had been unfavourable. The Kenny method involved the detection of spasm in affected muscles and the application of heat through a technique including the application of woollen

cloths steeped in hot water. This, in turn, was followed by gradual re-education of the affected tissues. Previous to the adoption of this technique, orthopaedic surgeons had almost routinely recommended early splinting of affected muscles with a view to holding them in the most suitable positions so as to prevent permanent deformities and disabilities. In presenting her concept, Sister Elizabeth Kenny called attention particularly to the presence of muscle spasm and to mental alienation which had to do with the inability of the mind to stimulate action of the muscles through the nerve cells and finally, inco-ordination, which means that because of disturbances in the normal motor patterns, new motor patterns are developed which must function properly before normal action can occur.

The method was widely adopted and used on many hundreds of cases. Difficulties in determining the extent of paralysis made it difficult also to evaluate the results of various methods of treatment. Most studies seemed to justify the conclusion that spasticity of the muscles exists in infantile paralysis not only in the affected muscles but also in the antagonistic muscles, and that application of the Kenny method of treatment diminishes the pain and apprehension and relieves the spasm. This permits muscle re-education to begin within a few days or weeks. The method cannot, however, be considered a cure of the disease since the damage done to the nerve cells by the virus and the ability of the nerve cell to recover are the measure of ultimate cure rather than relief of the symptoms in the early stages of the disease.

Permanent paralysis is not prevented in the presence of destruction of the cells in the spinal cord.

The evangelistic personality of Miss Kenny, the fact that she was not a physician and was unwilling to accept medical criticism based on scientific data, raised a controversy and brought to her support many persons who aided in the establishment of a Kenny foundation with headquarters in Minneapolis and with a fund-raising campaign continuously carried on throughout the United States. Furthermore, a motion picture dramatization of her life and work was prepared by one of the leading motion picture companies. (See also Ear, Nose and Throat, Diseases of; Georgia Warm Springs Foundation; Nervous System; Public Health Engineering.) (M. Fr.)

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Infant Mortality

Comparisons of mortality in early life are generally based upon infant mortality rates computed by dividing the number of deaths within the first year of life during a calendar year or period by the number of live births within that year or period. Thus, there were 111,127 deaths under one year of age in the United States during 1944 and 2,794,800 births, so that the infant mortality rate was 39.8 per 1,000 live births.

International Comparisons.—There were wide variations in the infant mortality rates in the countries for which data were available. The most favourable rates were generally experienced by the English-speaking countries and the Scandinavian countries, while the highest rates were found in eastern Europe, Asia and South America. In addition, countries for which data were not available undoubtedly had poor records.

Infant mortality in the United States improved markedly after 1937, when the rate was 54 per 1,000 live births. From this point, the figure fell to 40 in 1942, a level which was maintained for the next two years. A further improvement, to 38, was experienced in 1945, and a provisional record for the first four months of 1946 showed a 31/2% decrease from the rate for the corresponding period of the year before. The beneficial effects of advances in medical science, improvement in sanitation and advances in standard of living undoubtedly were factors in this decline. There were, further, two specific factors toward improvement introduced within this period. First, the Social Security act of 1935 encouraged the individual states to develop and expand maternity centres in their less densely populated areas. Second, funds were made available by the federal government in 1943 to provide medical, hospital and nursing care for the wives and babies of men in the lower ranks of the armed services.

Infant mortality in Canada declined sharply within four years from 76 per 1,000 live births in 1937 to 56 in 1940; after a slight setback in 1941, the rate fell to 54 in the next two years. England and Wales had a record of improving infant mortality which reached a low of 50 per 1,000 live births in 1939, when war began. The disruption of normal civilian life by the war was undoubtedly the principal factor in the rapid rise in infant mortality for that country to a point of 60 per 1,000 live births in 1941. However, as civilian living conditions during the war became stabilized, the rate fell rapidly to 46 per 1,000 in 1944. Scotland, with higher rates than England and Wales, practically duplicated the experience of that country in regard to trend. Except for one year, New Zealand had the remarkably low infant mortality rate of about 30 per 1,000 live births from 1937 through 1944. The record for Australia remained at a little under 40 per 1,000 from 1937 through 1942, but improved rapidly in the next two years, reaching the low figure of 31 per 1,006 in 1944. The white population of the Union of South Africa experienced a low infant mortality of 42 per 1,000 live births in 1944, after a six-year period during which the rate hovered about 50 per 1,000.

A study of the health of children of occupied Europe

(International Labour Office, Montreal, 1943) described. from information then available, the conditions which led to increases in infant mortality in the countries affected. Although the food rations stipulated for expectant mothers and very young children were larger than those for the rest of the population, the allowances prescribed were usually below the standards set for good health, and it was generally difficult to obtain even the amounts allowed. There was also a tendency to reduce the rations as food became scarce. Moreover, the quality of the obtainable food deteriorated. The decline in living conditions also weakened the resistance of the body to disease. Some of the consequences of these situations were shown in the infant mortality rates for several of the countries involved. Thus, France in the prewar period 1937-39 had an average annual infant mortality rate of 65 per 1,000 live births; this jumped to 91 in 1940, the year the country was overrun. The rate then fell to 71 in 1942, but the next two years saw sizable increases. For Belgium, the 1937-39 average infant mortality rate was 75 per 1,000 live births, but 1940 and 1941 saw rates of 85 and 84 respectively; however, lower rates were reported for the next three years. The Netherlands had an average annual rate of only 36 per 1,000 in 1937-39; in the ensuing war years from 1940 to 1943, the rates were 39, 43, 40 and 40 respectively. The available record for Norway showed an increase in infant mortality from 37 per 1,000 live births in 1939 to 43 in 1941, but the rate returned to 37 in 1942.

Table 1.—Annual Deaths Under One Year of Age per 1,000 Live Births in Certain Countries for Each Year from 1937 to 1944

Country	1937	1938	1939	1940	1941	1942	1943	1944
North America United States Canada Mexico	54 76 141	51 63 136	48 61 122	47 56 129	45 60 123	40 54 118	40 54 117	40 55 *
South America Argentina	94 241 154 96 136	102 236 156 99 139	91 225 162 82 132	90 217 140 86 122	82 200 150 83 121	84 195 154 93 115	78 184 *	80 181 * 117
Europe Austria	92 80 150 122 66 73 58 69 64 122 134 77 109 38 42 136 151 178 80 130 47	83 72 144 121 59 67 52 68 66 60 99 131 75 106 37 140 139 183 70	69 73 139 95† 58 650 70 63 60 * 1 27 96 34 37 120 69 136 69 136 43	72 85 136 94† 500 66 558 81 63 ** 134 863 39 39 126 187 109 346	* 84 123 99† 557 600 599 73 63 * 777 115 43 43 143 3143 341	77 127 98† 47 69 51 67 71 66 * 134 76 108 40 37 * 131 183 189 103 29 83	* 67 130 100† 45 80 49 49 75 * * * * * * * * * * * * * * * * * *	* 77 121 * 48 79 46 69 77 * * * 67 * * 122 * 65 30 42
Yugoslavia	141	144	*	*	*	*	*	*
Asia Ceylon, British India, British Japan Palestine	158 164 106 154	161 167 114 112	166 156 *	149 160 *	129 158 *	120 163 *	132 * * *	* * 87
Other Countries Australia	38 165	38 163	38° 161	38 162	40 150	39 168	36	31
New Zealand (Europeans) Union of South Africa	31	36	31	30	30	29	31	30
(Whites)	57	52	49	50	51	48	48	42
*Not available. †Bohemia-Moravia only.								

Germany had an infant mortality rate of 60 per 1,000 live births in 1938 and 1939; this rose to 63 in 1940 and 1941 and then to 66 in 1942. The experience of that country undoubtedly worsened as the war continued. Infant mortality in Italy rose from 96 per 1,000 live births in 1939

to 115 in 1941, but the next year saw some improvement. The records for infant mortality in Bulgaria, Hungary and Rumania, always at a high level, continued high during the war years, although wide fluctuations were experienced.

No single pattern was discernible in the trend of infant mortality among the neutral countries in World War II. Thus, Switzerland maintained its rate at about 40 per 1,000 live births from 1941 through 1944, a level somewhat below that of the immediate prewar years. Sweden had a record of improvement—from 45 per 1,000 live births in 1937 to a level of about 30 for 1942–44. On the other hand, the recorded rate for Spain fluctuated widely; a figure of 143 per 1,000 live births was given for 1941, but this was reduced to 99 in 1943. Portugal likewise had high and widely fluctuating infant mortality rates.

Of the countries for which data are shown in Table I, Chile had consistently higher rates than any other country, although the trend was distinctly downward from 241 per 1,000 live births in 1937 to 181 in 1944.

Infant Mortality According to Age, Race and Sex.—Data for the United States in regard to these characteristics are shown in Table II. Mortality within the first year of life diminishes rapidly as the child grows older. Thus, in 1943, there were 29.9 deaths within the first three months of life per 1,000 live births. This decreased rapidly to only 5.0 per 1,000 live births at ages 3 to 5 months, then to 3.2 per 1,000 at ages 6 to 8 months, and finally to a low of 1.9 per 1,000 live births at ages 9 to 11 months. The distribution of total deaths within the first year of life, according to age, was: 28.7% of all first year deaths within the first day of life; 49.4% during the first week; and 61.3% during the first month.

Table II.—Deaths at Specified Ages Under One Year per 1,000 Live Births and Deaths Under One Year per 1,000 Live Births by Race and Sex,
United States, 1937 to 1944

Age; Race; Sex	1937	1938	1939	1940	1941	1942	1943	1944
Under 1 day	14.7	14.1	14.1	13.9	13.2	12.3	11.6	
1 and 2 days	6.0	5.9	6.0	5.7	5.7	5.4	5.2	*
3 to 6 days	4.0	3.7	3.7	3.6	3.4	3.1	3.1	*
1 to 3 weeks	6.5	5.9	5.5	5.4	5,4	4.8	4.7	*
1 and 2 months	7.8	7.1	6.3	6.4	6.1	5.2	5.3	*
3 to 5 months	7.1	6.6	5.9	5.9	5.7	4.7	5.0	*
6 to 8 months	4.7	4.4	3.9	3.6	3.5	2.9	3.2	*
9 to 11 months	3.4	3.2	2.8	2.4	2.3	1.9	1.9	*
Under 1 Year								
White Males	56.0	52.5	49.2	48.3	46.0	41.6	420	41.2
White Females	44.4	41.4	39.1	37.8	36.1	32.7	32.7	32.4
Negro Males	91.0	87.0	82.3	82.2	82.1	70.7	68.9	65.5
Negro Females	75.2	70.9	66.0	65.2	67.3	58.3	55.9	55.0
*Not available.								

The least improvement, after 1937, was in the death rate for the first few days of life, and the greatest improvement was in the rate for infants nearly a year old. Thus, in 1937, there were 14.7 deaths in the first day of life per 1,000 live births; by 1943 the rate had decreased to 11.6, an improvement of 21%. On the other hand, at ages 9 to 11 months, the rate was 3.4 per 1,000 live births in 1937 and 1.9 in 1943, an improvement of 44%.

Infant mortality rates in the United States were appreciably lower for white lives than for Negro lives, and lower for females than for males. For example, in 1944, white females had an infant mortality rate of 32.4 per 1,000 live births, as compared with 41.2 for white males; the corresponding figures for Negro infants were 55.0 for females and 65.5 for males. The rate of improvement in the infant mortality rates from 1937 to 1944 was about the same for each colour and sex group, the figures at the end of the series for each category being somewhat less than three-quarters of the corresponding figure at the beginning of the series

Cause of Death.—Nine causes of death accounted in 1943 for almost four-fifths of all deaths within the first year of life. These nine causes are: premature birth, congenital malformations, pneumonia, injury at birth, diarrhoea and enteritis, congenital debility, influenza, whooping cough and syphilis. Within the first day of life, the outstanding causes of death were premature birth and injury at birth, the two alone accounting for three-fourths of all such early deaths. On the other hand, toward the end of the first year of life, the respiratory and the digestive diseases became of major importance as causes of death. For example, at ages 9 to 11 months, pneumonia accounted for more than one-quarter of all deaths at these ages and diarrhoea and enteritis for about one-sixth of the total.

Table III.—Deaths Under One Year of Age from Specified Causes per 1,000 Live Births, United States, 1937 to 1944

1937	1938	1939	1940	1941	1942	1943	1944
54.4	51.0	48.0	47.0	45.3	40.4	40,4	39.8
1.4	1.4	.9	.9	1.0			.5
.7	.6	.6	.5	.4			.3
7.5	7.0	6.1	6.3	5.4	5.1	5.4	4.8
1.7	.9	1.0	1.1	1.2	.6	.8	.8
5.3	5.0	4.0	3.5	3.7	2.8	3.0	3.3
4.6	4.5	4.6	4.7	4.7	4.9	4.9	5.1
1.6	1.4	1.2	1.2	1.1	1.0	.9	.9
15.3	14.3	14.2	13.7	13.3	12.3	11.8	11.9
4.4	4.4	4.5	4.5	4.3	4.1	3.7	3.6
11.9	11.5	10.9	10.6	10.2	8.7	8.8	8.6
	54.4 1.4 .7 7.5 1.7 5.3 4.6 1.6 15.3 4.4	54.4 51.0 1.4 1.4 .7 .6 7.5 7.0 1.7 .9 5.3 5.0 4.6 4.5 1.6 1.4 15.3 14.3 4.4 4.4	54.4 51.0 48.0 1.4 1.4 .9 .7 .6 .6 7.5 7.0 6.1 1.7 .9 1.0 5.3 5.0 4.0 4.6 4.5 4.6 1.6 1.4 1.2 15.3 14.3 14.2 4.4 4.4 4.5	54.4 51.0 48.0 47.0 1.4 1.4 .9 .9 7 .6 .6 .5 7.5 7.0 6.1 6.3 1.7 .9 1.0 1.1 5.3 5.0 4.0 3.5 4.6 4.5 4.6 4.7 1.6 1.4 1.2 1.2 15.3 14.3 14.2 13.7 4.4 4.4 4.5 4.5	54.4 51.0 48.0 47.0 45.3 1.4 1.4 .9 .9 1.0 7 6 6 .5 .4 7.5 7.0 6.1 6.3 5.4 1.7 .9 1.0 1.1 1.2 5.3 5.0 4.0 3.5 3.7 4.6 4.5 4.6 4.7 4.7 1.6 1.4 1.2 1.2 1.1 15.3 14.3 14.2 13.7 13.3 4.4 4.5 4.5 4.5	54.4 51.0 48.0 47.0 45.3 40.4 1.4 1.4 .9 .9 1.0 .6 7 .6 .6 .5 .4 .3 7.5 7.0 .6.1 6.3 5.4 5.1 1.7 .9 1.0 1.1 1.2 .6 5.3 5.0 4.0 3.5 3.7 2.8 4.6 4.5 4.6 4.7 4.7 4.9 1.6 1.4 1.2 1.2 1.1 1.0 15.3 14.3 14.2 13.7 13.3 12.3 4.4 4.4 4.5 4.5 4.3 4.1	54.4 51.0 48.0 47.0 45.3 40.4 40.4 1.4 1.4 .9 .9 1.0 .6 .8 .7 .6 .6 .5 .4 .3 .3 7.5 7.0 .6.1 6.3 5.4 5.1 5.4 1.7 .9 1.0 1.1 1.2 .6 .8 5.3 5.0 4.0 3.5 3.7 2.8 3.0 4.6 4.5 4.6 4.7 4.7 4.9 4.9 1.6 1.4 1.2 1.2 1.1 1.0 .9 15.3 14.3 14.2 13.7 13.3 12.3 11.8 4.4 4.4 4.5 4.5 4.3 4.1 3.7

Each of the more important causes of death in the first year of life, except for congenital malformations, shared in the general decline in the infant mortality rate in the United States from 1937 to 1944. The improvement in the rate for premature birth-the most important cause of infant death-from 15.3 per 1,000 live births in 1937 to 11.9 in 1944, was very noteworthy. Factors in this gain were probably the advances in prenatal care for mothers and the increasing tendency toward hospital confinement. The rapid downward trend in the rate for congenital debility, from 1.6 per 1,000 live births in 1937 to only 0.9 in 1944, may also have been a reflection of better prenatal care for mothers. The infant mortality rate from injury at birth declined from 4.4 per 1,000 live births in 1937 to 3.6 in 1944; the improvement here may also have resulted, in large part, from the rising proportion of hospital confinements and also from better obstetrical service. Pneumonia, as a cause of death in infancy, showed an almost spectacular improvement, the rate falling from 7.5 per 1,000 live births in 1937 to 4.8 in 1944; this favourable situation undoubtedly resulted from the use of chemotherapy in the disease. The sharp decrease in the infant mortality rate from diarrhoea and enteritis, from 5.3 per 1,000 live births in 1937 to 3.3 in 1944 may be attributed to better knowledge, on the part of mothers, of the nutritional requirements of children and to the general rise in standard of living, with an improvement in the quality of foods. Allowance being made for the usual tendency toward cyclical movements, the infant mortality rate from whooping cough decreased markedly. The rate for syphilis, the lowest on the list in Table III, was halved during the period of survey.

In a review of the factors bearing upon infant mortality, J. Yerushalmy (Annals of the American Academy of Political and Social Science, 237:134-141, Jan. 1945) drew attention to the lower infant mortality among babies born to mothers from 20 to 30 years of age than to those with younger or older mothers. Infant mortality rates were also found to be lowest for children who were second or third in order of birth.

There was also a suggestion of a familial tendency to stillbirths and high mortality in early infancy.

Stillbirths.—It was observed that the chance of stillbirth is also smallest among women 20 to 30 years of age who are having their second child (Statistical Bulletin of the Metropolitan Life Insurance company, Oct. 1943). There was a rapid increase in the rate of stillbirth as the age of the mother advanced, particularly so in the case of first births. Women with large families were also found to have a high rate of stillbirth. For the United States as a whole, the reported stillbirth rates per 1,000 live births in 1943 were: white, 24.2, Negro, 46.2.

Month of Birth.—An analysis of infant mortality according to month of birth by P. R. Eastman showed that the chances of survivorship to their first birthday anniversary were best for babies born in summer, also the season when most babies were born. The study was based on data for the United States covering the period 1935 to 1937 (American Journal of Public Health, 35:913-922, Sept. 1945). Among babies born during the summer months, mortality from conditions largely congenital in nature, such as stillbirth, premature birth, congenital debility, and congenital malformation, was at a minimum. This was taken to indicate that summer babies are constitutionally stronger against the hazards of early infancy than babies born in other seasons. But, in addition, the study indicated that the summer is the best time for a baby to be born. This conclusion was based upon the variation in mortality from environmental, aside from the congenital, causes according to month of birth; this also tended to have its low point for babies born during the summer.

Geographic Variation Within United States.-There were rather wide variations in infant mortality according to region throughout the United States, as may be seen in Table IV, which reflects the situation among white babies only. It will be noted that the rates were generally lowest in the Northern and Pacific coast states and highest in the southern and mountain states. For example, in 1944, the west north central states had a rate of only 32.9 infant deaths per 1,000 live births; this was followed closely by the Pacific coast states with a rate of 33.3, and then by the middle Atlantic states, the east north central states and the New England states, all with rates near 34 per 1,000. Between these relatively favourable records and the showings made by the areas with high rates, there was a wide gap, amounting to at least 6 points. Thus, the south Atlantic states had an infant mortality rate of 40.4 per 1,000 live births among its white babies in 1944. For the east south central states the rate was 42.1 and for the west south central it was 43.3 per 1,000 live births. The mountain states had a rate as high as 48.1 per 1,000, principally because of the poor situation among the large Mexican population in this area.

Table IV.—Deaths Under One Year of Age per 1,000 Live Births, Ly Geographic Division and Size of Community, White Persons in the United States, 1940 to 1944

											1940	1941	1942	1943	1944
Total United States	, .										43.2	41.2	37.3	37.5	36.9
Geographic Division													-,	-,	
New England											38.8	36.4	33.7	36.5	34.5
Middle Atlantic											38.5	35.0	32.8	33.2	33.9
East North Central .											38.5	36.8	34.5	35.8	34.4
West North Central											37.6	37.5	33.7	33.9	32.9
South Atlantic											48.2	50.5	42.2	41.2	40.4
East South Central .											50.5	52.2	43.7	42.6	42.1
West South Central							٠				56.9	49.2	45.4	43.8	43.3
Mountain											58.6	52.5	51.5	49.1	48.1
Pacific					٠		٠		٠		36.9	35.1	33.5	33.4	33.3
Size of Community															
100,000 and more						_			_		36.1	33.7	31.8	33.2	•
25,000-100,000								:				39.2	37.1	38.6	
10,000- 25,000			:	:		:	•	Ĭ		:}	42.9	41.8	38.5	40.2	
2,500 10,000								:			50.2	46.6	41.9	42.1	
Rural							-			-	45.9	45.0	39.7	38.3	•
*Not available.			-	-	-	Ť	•	•	Ī	•		45.5	07.7	50.5	

The differences in the infant mortality rates between the

geographic divisions were not as great in 1944 as they were in 1940. This reflected, of course, a faster rate of improvement in the areas where the rates were highest. In the brief period from 1940 to 1944, the rate fell by 24% in the west south central states, by 18% in the mountain states, and by about 16% in the south Atlantic and east south central states.

On the other hand, decreases of 10% to 12% were found in the remaining geographic divisions.

Although it was commonly believed that health conditions were better in rural sections than in urban communities, the contrary situation was found in a study of infant mortality in which both births and deaths were duly allocated to the regular place of residence of the mother. As shown in the lower tier of Table IV, the infant mortality rate for white babies in 1943 was lowest in cities of 100,000 or more, the figure being 33.2 per 1,000 live births. There was a steady upward progression in the rate as the size of the community decreased. Thus, cities of 25,000 to 100,000 had a rate of 38.6; communities of 10,000 to 25,000, a rate of 40.2; and towns of 2,500 to 10,000 a rate of 42.1. However, rural areas reported a rate of only 38.3 per 1,000 live births.

The better showing of the large cities could be attributed to the accessibility of maternity hospitals and facilities especially designed for the care of pregnant women and newborn children, to the ready presence of specialized physicians, and to the availability of nursing services. (See also MARRIAGE AND DIVORCE.)

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Infantry

See Munitions of War; Tactics of World War II, World War II.

Inflation

See Business Review; Consumer Credit; Prices. See also under various countries.

Influenza

See EPIDEMICS AND PUBLIC HEALTH CONTROL.

Ingersoll, Royal Eason

Ingersoll (1883-), U.S. naval officer, was born June 20, 1883, in Washington, D.C., the son of Rear Adm. Royal Rodney Ingersoll. After graduation from the Naval academy in 1905 he served on several U.S. warships. He joined the Asiatic fleet in 1913 and the office of naval operations in 1916; during World War I he received the navy cross for his services in organizing, developing and directing the communications office of the navy department. After that war he served as executive officer and commander of battleships and cruisers. In Dec. 1937 Ingersoll was sent on a secret presidential mission to London to discuss possible U.S.-British co-operation in the event of a war with Japan. Pres. Roosevelt nominated him rear admiral in 1938, jumping him over the heads of a dozen senior officers. On Dec. 20, 1941, as part of the shake-up of command following the Pearl Harbor attack, Secretary of Navy Knox appointed him commander of the Atlantic fleet to succeed Adm. Ernest J. King, who became commander in chief of the U.S. fleet. Under Ingersoll's command in 1942-43 the Atlantic fleet not only did extensive convoy

duty but also played an important part in the invasions of North Africa, Sicily and Italy. Ingersoll was promoted to the rank of full admiral in July 1942. In Nov. 1944 he was awarded the distinguished service medal and was named commander of the western sea frontier with the status of deputy chief of naval operations; his task was that of accelerating the flow of men and equipment across the Pacific from the United States. In Dec. 1945, he relinquished this command.

Inland Waterways

See Canals and Inland Waterways.

Inner Mongolia

See Mongolia.

Inönü, Ismet

Inönü (Ismet Pasha) (1884-), Turkish statesman, was born in Smyrna (Izmir) on Sept. 24, 1884. He was educated at an artillery school in Constantinople and at the General Staff college; by 1926 he had risen to the rank of full general. During World War I, he saw action in Palestine against the British, and was Kemal Ataturk's chief of staff during the campaign against the Russians in eastern Turkey. When the Greeks invaded Turkey in 1921, Inönü again served as Ataturk's chief of staff. He defeated the Greeks twice at Inönü and took the name of the battlefield after Ataturk decreed that all Turks must have surnames. With the proclamation of the Turkish republic on Oct. 29, 1923, Ataturk became president and Inönü was made premier. Although Inönü approved Ataturk's radical measures to westernize Turkey, he himself was more conservative and disagreed frequently with his chief. Inönü resigned unexpectedly in 1937, but after Ataturk's death in 1938 he was unanimously chosen president by the Grand National assembly.

During the early part of World War II, Inönü carefully avoided offending either Germany or the U.S.S.R. In late 1943, however, he conferred with President Roosevelt and Prime Minister Churchill in Cairo, and on Dec. 7 the three leaders proclaimed the unity of Turkey with the United Nations. Thereafter, Inönü led Turkey steadily into the Allied camp, breaking diplomatic relations with Germany (Aug. 7, 1944) and Japan (Jan. 3, 1945), and finally declaring war on both axis nations (Feb. 23, 1945), thus earning a seat at the San Francisco conference of the United Nations.

Insanity

See PSYCHIATRY.

Insecticides

See AGRICULTURAL RESEARCH ADMINISTRATION; CHEMISTRY; ENTOMOLOGY.

Insects

See Entomology.

Instalment Buying and Selling

See Consumer Credit.

Institute of Chemistry, Royal

See Societies and Associations.

Institute of Pacific Relations

See Societies and Associations.

674 Institutum Divi Thomae

The Institutum Divi Thomae, graduate school of science of the Athenaeum of Ohio, was founded in 1935 by the Most Reverend John T. McNicholas, archbishop of Cincinnati, with Dr. George Speri Sperti as co-founder and director, to foster fundamental scientific research and to afford intensive research training to a limited number of graduate students.

The first paper reporting research conducted at the institutum was published in 1937. The ten-year span from 1937 through 1946 therefore coincided with the first decade of active scientific publication at the institutum. During this period, more than 175 papers appeared from the institutum and its affiliated laboratories. The broad fields covered were those of physics and biophysics, chemistry and biochemistry, biology, experimental medicine, cancer and the relation of philosophy to science. Important developments occurred in the study of cellular growth and metabolism, wound healing, antibiotics, the mechanism of drug action and cancer. In the field of cancer the promising results in the treatment of certain types of skin tumours by the injection of tissue extracts were reported in 1946. During World War II the major research efforts of the institutum were directed toward war projects, including studies of antimalarial and antidysentery drugs, wound healing, agar and studies of aviation instruments. In addition several of the members were active in the organization of research for the War Production board. (E. S. C.)

Insulin

See DIABETES; MEDICINE.

Insurance

Life Insurance.—Through all the turbulent years of the decade 1937–46, the legal reserve life insurance companies of the United States and Canada maintained substantial progress. Insurance outstanding (excluding reinsurance) rose steadily from \$110,361,000,000 at the beginning of 1937 to \$180,000,000,000 at the end of 1946, an increase of more than 60%. It was estimated that this insurance was held by some 75,000,000 persons, about half the population of the United States and a third that of Canada. New insurance declined in the early years of the decade from the \$13,649,000,000 written in 1937, to \$12,074,000,000 in 1940. Thereafter new issue increased, reaching \$16,984,000,000 in 1945. In 1946 it was estimated that more than \$20,000,000,000,000 of new insurance was put on the books.

Assets held by U.S. and Canadian companies to guarantee the fulfilment of their obligations doubled in the 10-year period, from \$26,886,000,000 at the beginning of 1937, to more than \$50,000,000,000 at the end of 1946. In addition, policyholders and beneficiaries received more than \$27,500,000,000 in benefit payments during the intervening 10 years. Such payments increased each year through 1940, but decreased thereafter because of the drop in surrender value demand. After the war's end, surrender value payments increased again.

World War II had a much more pronounced effect on life insurance in other countries than it did in the United States and Canada. In Great Britain, France, the Netherlands and Switzerland, new business declined in 1939 and fell abruptly in 1940 to a level about half that of 1937. The same general experience was noted in the Scan-

dinavian countries, although, except in Norway, the drop in 1940 was not quite so pronounced. After 1940 new insurance increased in all these countries to or beyond the prewar levels. Data on business outstanding showed that the total was in general well maintained in most countries, with a minor dip in some in 1940 that was later recovered.

Apart from war deaths, mortality among policyholders in the United States and Canada decreased in nearly every one of the ten years under consideration, continuing a trend that began some years before. Even during the war years, total mortality remained below that of 1936. Nearly all causes of death shared in the decline. Spectacular improvements, by more than two-thirds, were made in this period in death rates from influenza, pneumonia and appendicitis, chiefly because of new methods of chemotherapy (q.v.). Despite fears that the war might occasion a setback in the fight against tuberculosis, the longtime downtrend in mortality from this disease was maintained. In 1945 such deaths were about a third below the 1936 rate. Fatalities from motor vehicle accidents declined after 1936, particularly during the war, when gasoline rationing was in effect. Unfortunately, the death rate from this cause rose immediately after the war, but it still remained below that of 1936.

War claims paid by U.S. companies were reported at \$313,000,000. Of this, \$200,000,000 was paid on battle deaths, \$80,000,000 for deaths from accidents and \$33,000,000 for deaths from disease suffered by policyholders in military service. In total, the war claims represented about 6.7% of all life insurance death benefits paid in the war years 1942-45. The extensive military medical facilities of World War II that saved the lives of so many men wounded in action also served to cut down the deaths from disease to a much smaller proportion of total military casualties than in any previous war. Deaths from nonbattle injuries, however, were a much higher proportion of the total than in World War I, because of the large part that the aeroplane and other motorized equipment played in the later conflict.

The favourable trend in mortality during this decade was far overshadowed in its effect on the cost of life insurance by the decline in the interest rate earned on life insurance company investments, so that such cost to policyholders increased. Many companies were forced to raise premium rates for new policies by adopting a lower interest assumption. Older participating policies were affected by the reduction in interest earnings through substantial cuts in dividends. Thus, low interest rates hurt life insurance policyholders just as they did others who relied on the income from savings.

For life insurance companies and other institutional investors the downtrend in interest rates began with real force in the early 1930s and continued steadily all through the decade. The net rate of interest obtained on the assets of all U.S. life insurance companies in 1945, without allowance for asset gains or losses, was 3.05%. This was an all-time low and contrasted with 3.7% in 1936 and more than 5% in 1930. These drastic declines reflected in part the general world-wide downtrend in the pure interest rate and in part the change in the composition of insurance company investments from a preponderance of higher-yielding mortgages and corporate securities to a predominance of lower-yielding U.S. government bonds.

As to investments, the outstanding characteristic of the decade was the heavy acquisition of U.S. government securities during the war period. Even in the early 1930s, such bonds were already playing an increasing role. In 1930 they had formed less than 2% of assets, but by the

end of 1936 they amounted to more than \$3,800,000,000, or 15% of all assets, a larger proportion than even at the peak of World War I financing. At Pearl Harbor the total had grown to \$6,600,000,000. By the end of 1945 the companies had increased their holdings to \$20,500,000,000, or more than 45% of all assets. On Aug. 31, 1946, the companies held nearly \$22,000,000,000 in U.S. government bonds with an additional \$1,000,000,000 in dominion of Canada government bonds. In Britain, the life insurance companies ended the war with about 45% of their assets in British government securities, while Canadian companies' holdings of dominion government bonds were about half of their Canadian assets.

After increasing during the first five years of the decade, the proportion of assets in private corporate bonds declined because of the curtailed flotation of private securities during the war. In the immediate postwar period there was a slight trend upward. Holdings of industrial and miscellaneous bonds nearly quadrupled from the end of 1936, to about \$2,500,000,000 on Aug. 31, 1946, while public utility bonds more than doubled to nearly \$5,500,000,000. Railroads increased only slightly over the decade, from \$2,700,000,000 to \$3,000,000,000. Stocks, mostly preferred or guaranteed, increased a bit faster, to more than \$1,000,-000,000 at the end of Aug. 1946. Holdings of state and local government securities of the United States grew during the late 1930s but dwindled rapidly when the companies sold them off at high prices after the federal revenue act of 1942 deprived life companies of the normal benefit of holding tax-exempt securities.

Continuing an earlier trend, the proportion of assets in mortgages declined throughout most of the decade, but especially during the war period because of the restrictions on construction. With revival of building in 1946 this type of investment showed signs of recovery. City mortgage holdings increased from \$4,200,000,000 at the end of 1936 to nearly \$6,000,000,000 at the end of Aug. 1946; farm mortgage portfolio decreased in the same period from just under \$1,000,000,000 to \$785,000,000.

Beginning in the early 1940s, about a dozen states established urban redevelopment corporation laws with the aim of encouraging by certain special concessions the flow of life insurance and other private funds into rehabilitation of slum areas by construction of modern large-scale housing. In 1938 New York state had enacted a law permitting-but without special concessions-any company domiciled in that state to own and operate large-scale housing up to 10% of its assets. Somewhat similar laws were enacted later in several other important insurance states, notably New Jersey, Connecticut and Massachusetts. Before World War II, one company had under way three very large projects of this nature, and after the end of the war other companies entered this field. The housing already constructed or under construction at the end of 1946 totalled nearly \$300,000,000.

In addition to housing, companies began to acquire certain other urban income-producing real estate for investment. This was a new field for eastern U.S. companies, as permitted by laws enacted in Connecticut, New Jersey and New York. The New York law, passed in 1946, permitted such investments up to 3% of assets.

A major problem to life insurance companies was the question of properly distributing the increased hazard of death created by war. Before World War II most companies in the United States and Canada, and to a lesser extent in Great Britain, issued policies without any restriction on the insurance coverage because of military service. The idea was that, if and when war occurred, all policy-

holders already insured at the time would have full coverage, and the cost of the increased mortality among those called upon to face the direct risks of war would be distributed among the whole body of policyholders as a part of the general burden of war. In new policies issued during a war, however, war risk provisions would be included to limit the company's liability for death caused by all or some of the war hazards. This was necessary because otherwise persons knowing that they were or would soon become subject to the dangers of war would hasten to purchase as much insurance at normal peacetime rates as they could buy, thereby imposing a disproportionate risk on the existing group of policyholders.

When World War II broke out, the war risk provision adopted for new insurance in Great Britain excluded the risk of all deaths arising from war, whether the insured was in military service or not. Full coverage for the excluded risks was granted in some cases on payment of extra premiums varying with the particular policyholder's hazard. Generally no coverage was granted against the risk of death in aviation activities or in the air forces.

In U.S. and Canadian companies the war risk provisions were considerably less restrictive. In the type of provision used by most companies, there was no restriction on civilians or on military personnel while they were stationed in the home countries, as the war risk for them was relatively remote. For civilians travelling outside the two countries the risk of death as a result of war was excluded. Death while in military service outside the two countries was not covered, nor was the risk of death in aviation activities either at home or abroad. Full coverage for the excluded hazards (except air service abroad) could be obtained in some companies on payment of an extra premium.

With the cessation of hostilities, practically all U.S. and Canadian companies discontinued the use of war clauses in new policies and rendered inoperative the war provision in existing policies. In Great Britain many companies continued to include war risk restrictions in their policies.

In the United States, servicemen could purchase up to \$10,000 of national service life insurance, which was entirely free of all restrictions. The cost of claims traceable to the war was borne by the government as were all the expenses of administration. The aggregate amount in force reached a peak of about \$125,000,000,000 near V-J day. After demobilization, many servicemen permitted their national service life insurance to lapse in spite of its favourable features, and in spite of urging by the Veterans' administration and by the life insurance companies that they retain it. At the end of Dec. 1946 insurance in force had declined to about \$34,250,000,000.

In 1939 and 1940, an investigation into the operations of U.S. life insurance companies was conducted by the Temporary National Economic committee set up by the U.S. congress to investigate "concentration of economic power." Its inquiries into life insurance companies were initially to be directed to their investment operations but later were extended to all phases of the business. The questioning at the hearings reflected a generally critical attitude toward the industry but, as a whole, the record brought forth attested to the sound management of the companies and their achievements in providing protection. The final conclusions of the TNEC on life insurance, rendered in March 1941, were mainly directed to the several states, suggesting that they improve their insurance regulatory facilities in a number of respects. Some minor federal regulations were recommended. It was also sug-

gested that the companies improve the operation of industrial insurance.

A significant legislative development in the United States was started in 1943, when the states began to enact, as part of a nation-wide program, new standard valuation and nonforfeiture laws. This legislation was the result of several years' study by a committee of the National Association of Insurance Commissioners and was recommended by that body as well as by many life insurance organizations. It provided for the use of modern mortality tables and new methods of determining minimum values for policy reserves and nonforfeiture benefits. The new nonforfeiture method produced guaranteed minimum values more closely related to the equities of policyholders at the time of default in premium payment than was the case under older statutes. At the close of the 1946 legislative sessions, 24 states had adopted the new legislation, to take effect for policies issued from Jan. 1, 1948. There were perhaps 11 other states where the proposed measures appeared acceptable under existing statutes.

Another important insurance development was a decision by the supreme court of the United States in June 1944, declaring in effect that insurance was commerce and, when conducted across state boundaries, was interstate commerce as regards such statutes as the federal Sherman Anti-Trust act. This ruling was in a sense a reversal of decisions going back 75 years that held insurance was not commerce for the purposes of the cases then before the court. In March 1945 congress enacted a law under which supervision and taxation of the insurance business by the individual states was continued. With some exceptions, the application to insurance of the federal antitrust and other related laws was suspended until Jan. 1, 1948, but such laws would be in effect thereafter to the extent that the business was not regulated by state laws. After this decision the validity of the tax laws of certain states which imposed on domestic companies either no tax or a lighter one than on out-of-state companies was challenged by litigation, but in June 1946 the supreme court upheld such a tax law of South Carolina as well as certain regulatory statutes of California. The court held, in effect, that the federal legislation of March 1945 supported the existing state system of regulation and taxation, including statutes such as the ones challenged. (See also VETERANS' ADMIN-ISTRATION.)

BIBLIOGRÁPHY.—The Spectator (Life) Insurance Year Book (1937-45); Report of the Superintendent of Insurance of the Dominion of Canada, vol. II, Life Insurance Companies (Ottawa, 1937-45); Temporary National Economic Committee, Hearings, parts 4 (1939), 10, 10-A, 12, 13, 28 (1940), 31-A, pp. 18,099-124, 18,441-51 (1941), monographs 2, 28, 28-A (1940), Final Report and Recommendations (1941). (L. A. L.)

Accident and Health.—With a gain of approximately 250%, premiums of commercial accident and health companies increased from \$195,123,702 in 1937 to \$675,000,000 in 1946. Figures compiled at the end of 1945 showed there were approximately 8,640,000,000 individual policies in force, 6,090,000 providing weekly or monthly indemnity benefits for both accident and health, while 2,422,000 provided accident benefits only and 128,000 sickness only. At the same time 5,928,333 were covered under 23,059 master group contracts for average protection of \$17 a week. A study of claim complaints received by the Michigan and Illinois insurance departments in 1945 showed that there was only 1 complaint out of each 1,223 claims filed. Out of the 967 complaints filed in comparison to a total of 730,429 claims, only 175 were held justified by state insurance

officials. The possibility of further expansion of state insurance plans and the extension of social security to include disability protection led commercial companies to liberalize practices and to give pronounced attention to public needs and attitudes. (See also SOCIAL SECURITY.)

(C. D. Sp.)

Great Britain .- Of all the heterogeneous types of insurance included in the accident and miscellaneous account of the British offices, the two largest were motor and workmen's compensation insurance. From the end of July 1942 until June 1945, all pleasure motoring ceased and, accentuated by a wartime discount of 20% on the insurance rates for private cars remaining fully insured, the premium income from motor insurance yielded pride of place to workmen's compensation insurance, which was assisted by wartime factors such as increased rates of wages, overtime payments and the generally increased industrial activity. Property owners and general third party liability, plate glass insurance, fidelity guarantees and the insurance of boilers and machinery added to the increased volume of accident business transacted during the period 1937-46. Income from burglary insurance was assisted by the immensely increased values at risk, but claims rose to a very high level. The increasing number of passengers using aircraft caused a greater demand for personal accident insurance.

Legislation continued to play an important part in the development of accident insurance. With the upswing in wages and the cost of living, there were successive increases in benefits under the Workmen's Compensation act, but the additional liability imposed was absorbed by most insurers without increase in premium. The government's social security scheme set a term to the existing basis of compensation for industrial injuries, and by the operation of the National Insurance (Industrial Injuries) act, 1946, workmen's compensation insurance in Great Britain would cease to be required. Claims at common law, both in industry and in connection with road accidents, increased in frequency, and the high awards made by the courts were reflected in insurance claims experience. After the inception of compulsory third-party motor insurance, there remained the problem of the uninsured motorist. This was solved by the insurance companies and Lloyd's underwriters voluntarily entering into an agreement with the ministry of transport to bridge the gap in the law by setting up a pool from which victims of uninsured motorists would be compensated.

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Automobile.—In the early part of the decade, many companies tried out the Safe Driver Award plan which allowed a return premium on policies covering automobiles which were not involved in an accident during the policy term. The plan was dropped shortly after Pearl Harbor, and at that time rates were substantially lowered because of gasoline rationing and the curtailed use of cars. For the first time, a rate reduction was not based on actual experience but was a judgment discount based on the new conditions brought about by the war.

All during this period, companies continued to broaden their coverage and included such items as medical payments coverage and drive-other-cars coverage for the owner and spouse. The passing of Financial Responsibility laws in many states substantially increased the number of cars insured.

After V-J day, the accident frequency jumped tremendously. With the ever-increasing cost of claims, rates were increased rather substantially a few months after the war. Property damage and collision rates were sharply increased primarily because of the greatly increased cost of repairs and replacements. Here again, rates were not based on experience. For the first time, rates were increased twice within a 12-month period, but most companies continued to have an unprofitable experience on their automobile business. (For British motor insurance, see above under Accident and Health.)

(F. M. R.)

BIBLIOGRAPHY.—J. A. Appleman, Automobile Liability Insurance (1938); V. C. Gorton, Automobile Claim Practice (1940); Miscellaneous Laws Affecting Automobile Liability and Liability Insurance (1939).

Fire Insurance.—Table I shows U.S. premium receipts; these statistics were compiled to include those from marine as well as fire insurance. It was necessary to include the latter because separate statistics were not in all cases available, and the same method for presenting the premiums received and the losses paid should be followed in order that those seeking actual comparisons might rely on the presentation.

For the ten years in question, premium receipts were as in Table I.

Table I.—U. S. Fire and Marine Premium Receipts
(From The Spectator)

Year	Stock Companies	Mutual Companies	Lloyds and Recipro	ocals Totals
1936	759,428,706	131,426,765	33,440,229	924,295,700
1937	831,621,999	140,505,819	39,662,457	1,011,790,275
1938	782,204,495	139,468,870	<i>37,885,394</i>	959,558,759
1939	814,513,872	142,128,320	40,360,956	997,003,148
1940	932,074,089	156,298,138	40,644,134	1,129,016,361
1941	1,075,616,584	183,206,284	50,857,273	1,309,680,141
1942	1,144,460,605	199,825,514	51,995,729	1,396,281,848
1943	1,074,725,182	212,042,269	47,723,767	1,334,491,218
1944	1,154,056,147	217,763,612	50,085,219	1,421,904,978
1945	1,252,253,350	251,769,464	51,913,310	1,555,936,124

Losses paid are shown in Table II.

Table II.—U. S. Fire and Marine Losses Paid (From The Spectator)

Year	Stock Companies	Mutual Companies	Lloyds and Reciprocals	Totals
1936	325,372,677	46,371,510	17,046,821	388,791,008
1937	356,091,052	48,621,746	19,848,832	424,561,630
1938	378,096,941	52,522,560	19,074,473	449,693,974
1939	366,356,039	54,130,766	19,330,410	439,817,215
1940	405,335,697	58,938,791	21,006,494	485,280,982
1941	471,874,540	70,511,750	25,763,807	568,150,097
1942	630,119,331	72,641,133	24,834,561	727,595,025
1943	507,320,335	70,038,818	21,823,682	599,182,835
1944	554,579,236	82,115,247	24,193,246	660,887,729
1945	625.283.318	95.656.248	27.725.143	748.664.709

The year 1937 was the first year in which the total premiums exceeded \$1,000,000,000. For the next two years, 1938 and 1939, there was a drop below the billion dollar mark, but in 1940 the premiums were \$1,129,000,000, and in 1945 they rose to \$1,555,000,000. The year 1941 was the first in which losses exceeded \$500,000,000, amounting to more than \$568,000,000. In 1945 the maximum was more than \$748,000,000.

In this ten-year period, the most outstanding event in fire insurance was a decision of the U.S. supreme court in Oct. 1943, in the case of *The United States, Appellant*, v. South-Eastern Underwriters Association, et al. This decision reversed the earlier decision of 75 years previous and decided that insurance was commerce and therefore subject to federal jurisdiction. Inasmuch as the business of insurance had grown up around the earlier decision and all legislation was practically based thereon, it was considered that the decision was so far-reaching that a breathing

spell should be granted the companies and the states until Jan. 1, 1948. At that time, if the states had passed laws in conformity with federal laws, the U.S. government would accept that condition, but if any state had not so placed itself in harmony, the U.S. government might intervene. (See also Fires and Fire Losses.)

(E. R. H.)

BIBLIOGRAPHY.—Best's Insurance Reports, Fire and Marine edition (annual); Spectator Fire Yearbook; A. E. Wierman, Fire and Marine Insurance (1939); J. E. Hedges, Practical Fire and Casualty Insurance (1946).

War Damage.—War Damage corporation was created by Reconstruction Finance corporation (an agency of the government of the United States) by authority of sections 5d and 5g of the Reconstruction Finance Corporation act, as amended. Its charter was executed on Dec. 13, 1941, and filed on March 31, 1942. The corporation's capital of \$100,000,000 was subscribed by Reconstruction Finance corporation.

By an act of congress of March 27, 1942, the corporation was empowered to extend gratuitous protection to real and personal property in the United States and its territories and possessions, and to property in transit between points in those areas. Such free protection was limited to losses resulting from enemy attack after Dec. 6, 1941, and before July 1, 1942, and was made subject to the authorizations and limitations prescribed with respect to the reasonable protection directed to be extended by the corporation under policies of insurance. By the same act of congress, the corporation was authorized and directed to extend reasonable protection against loss or damage 1esulting from enemy attack, in consideration of premiums to be collected by the corporation, and Reconstruction Finance corporation was authorized to supply War Damage corporation with funds for such purpose in an amount not exceeding \$1,000,000,000.

War Damage corporation's general insurance program became effective on July 1, 1942, immediately upon termination of the free compensation authorized before that date. In order to use existing facilities and avoid creating a new governmental organization to handle the program in the field, War Damage corporation entered into agreements with 546 fire insurance companies to act as "fiduciary agents" for the corporation in the issuance and servicing of policies of insurance and the collection of premiums. Through these companies and their subagents, the corporation operated in about 1,450 established, policy-issuing offices. The agent or broker who submitted an application for insurance received a service fee of 5% of the premium, the minimum service fee being \$1 and the maximum \$1,000 per policy. The insurance company through which the application was submitted and the policy issued and serviced received an expense allowance equal to 31/2% of the premium, but not less than 50 cents or more than \$700 for each policy, subject to future adjustment on the basis of actual expenses of the issuing company in connection with business transacted for War Damage corporation. The 546 participating companies had an interest equal to 10% of any final net operating profit resulting from the general program, such interest, however, not to exceed \$20,000,000, and assumed liability for 10% of any final net operating loss, such liability, however, not to exceed \$20,-000,000. Premiums collected under the general program aggregated approximately \$244,800,000 to June 30, 1945, and it was estimated that \$114,000,000,000 of War Damage corporation insurance was in force on that date. Under this program, more than 8,700,000 policies and renewal

certificates were issued by the corporation. Annual premium rates were uniform throughout the United States and its territories, and averaged not far from 10 cents per \$100 of insurance, varying with different types of property. Investigation and adjustment of claims were conducted by the corporation through the offices and facilities of Fire Companies' Adjustment Bureau, Inc., Western Adjustment and Inspection company and Underwriters Adjusting company, which made their personnel and some 465 offices throughout the United States available to War Damage corporation for that purpose. Compensation for such services was made on a basis of actual cost.

On Dec. 21, 1942, insurance was made available on money and securities through 88 casualty and surety insurance companies which acted as fiduciary agents. The service fee and expense reimbursement allowed to brokers and participating companies were the same as under the general program, and the participating companies had a similar 10% interest in the operating profits or losses, such interests, however, not to exceed \$5,000,000. As of June 30,1945, premiums from the Money and Securities program aggregated approximately \$980,000, and approximately \$3,000,000,000,000 of insurance, covering money and securities, was in force under nearly 2,800 policies.

On March 15, 1943, the corporation entered into a contract of reinsurance covering widely-distributed plate glass insurance risks, receiving therefor a premium of \$146,793. No loss was suffered under such contract of reinsurance.

War Damage corporation did not at any time issue policies of insurance on vessels or cargoes at sea, and pursuant to the authority contained in the act of March 27, 1942, ships, antiques, works of art and other specified classes of property were, with the approval of the secretary of commerce, generally excluded from the protection authorized by the act.

Insurance which was duly in force on March 31, 1944, was automatically extended for 12 months without additional premium or other charge, and insurance in force on Feb. 28, 1945, was similarly extended. No renewal or extension of insurance was authorized by War Damage corporation in 1946, and insurance that was extended in 1945 terminated upon expiration of that extension.

Under its insurance programs the corporation suffered losses amounting to less than \$100,000, including that which resulted from the explosion of the destroyer "Turner" on Jan. 3, 1944.

Payments by the corporation on account of the free compensation authorized to be made for losses sustained after Dec. 6, 1941, and before July 1, 1942, aggregated \$370,418.04 on June 30, 1946. On Aug. 9, 1946, the corporation gave public notice that all claims for free compensation for loss of or damage to property in the territories or possessions of the United States (other than the Philippines) had to be presented before Oct. 16, 1946.

War Damage corporation having been authorized by the act of March 27, 1942, to receive and adjust losses suffered after Dec. 6, 1941, and before July 1, 1942, in the Philippine Islands, the corporation received, during the years from 1942 to 1946, several thousand claims for losses suffered in that area. In June 1945 War Damage corporation sent three special investigators to the Philippine Islands to make a general survey of war damage to property in that area. The survey was completed in Sept. 1945; the report made to War Damage corporation was published in a senate committee print of the 79th congress,

first session, for the use of the committee on territories and insular affairs.

On April 30, 1946, public law 370, 79th congress, created a new agency designated as Philippine War Damage commission, which was authorized to make compensation, to an extent specified in the act, for war damage to property in the Philippine Islands. By that act the previous authority of War Damage corporation to make compensation for loss of or damage to property in the Philippine Islands was terminated, and War Damage corporation was required to make available or deliver to Philippine War Damage commission all records, claims, files and other documents in its possession pertaining to Philippine claims. (G. E. A.)

Great Britain.—The War Risks Insurance act, 1939 (part 2), and the War Damage act, 1941, were the principal acts governing war damage on land in Great Britain and Northern Ireland. The former act was commonly known as "the commodities insurance scheme." Part 1 of the act of 1941 made provision with respect to war damage to buildings and immovable property, while part 2 of the act detailed further insurance schemes, i.e., "the business scheme" applying to business goods not insurable under the commodity scheme, and "the private chattels scheme," applying to household goods and personal effects, not being goods insurable under the business scheme.

Under the "commodities" and "business" schemes, insurance was compulsory where the total value exceeded £1,000, while under the "private chattels" scheme, limited free compensation was allowed with the option to effect additional cover by paying a premium and taking out an annual policy. Under these three insurance schemes the board of trade acted as insurer, while sources outside government departments such as fire insurance companies, Lloyd's brokers and others carrying on insurance agencies, were called into service in connection with the registration of cover, the collection of premiums and the issue of policies. The period of the policies varied from one month to a year and the total number of policies issued under the insurance schemes was: commodity, 9,500,000; business, 4,100,000 and private chattels, 3,900,000. In addition, more than 20,000,000 persons were entitled to free cover under the private chattels scheme.

Two government White Papers showed the financial position of the schemes at March 31, 1945, as follows:

	Premiums and Cother Receipts	Claims and Expenses £
Business scheme	77,000,000 16,000,000 203,000,000	93,000,000 87,000,000 122,000,000
	£296,000,000	£302,000,000

The work of the insurance interests on behalf of the board of trade was done at cost and without profit, and earned the high commendation of the government.

For the purpose of part 1 of the War Damage act dealing with buildings and immovable property, a War Damage commission was constituted, consisting of persons appointed by the treasury. Contributions were collected through the medium of the inland revenue authorities, and were compulsory in respect of all properties assessed for income tax under schedule A, or if included in a valuation list for local rates. A statement issued in Sept. 1945 by the War Damage commission estimated contributions to yield £200,000,000, to which the government had undertaken to add, if necessary, a like sum from the exchequer. At that time the commission had paid out £271,281,171 in respect of war damage cost, and the major part of its task had still to be dealt with. In addition to the cost of repair or

rebuilding some 3,000,000 properties, there were about 200,000 properties scheduled as total losses for which the commission would be called upon to make a value payment.

The War Damage act was amended in the light of experience by the War Damage (Amendment) acts of 1942 and 1943. Legislation to provide for compensation in respect of action taken in the exercise of certain emergency powers, such as the requisitioning of land or property, was set out in the Compensation (Defense) act, 1939.

(P. Ss.)

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Marine.—As in other types of insurance during the decade 1937–46, World War II dominated the panorama of marine insurance markets of the world. The years 1937 to Sept. 1939 provided the prologue; the years 1940 to Dec. 1941, Act I; 1942 to V-J day in 1945, Act II; and the remainder, an incomplete Act III. Admitting this premise, it is perhaps more appropriate to set forth the highlights as respects war risk insurance to shipping first.

In 1937 the Spanish Civil War and the Sino-Japanese "incident" provided the backdrop. For the first time marine underwriters were face to face with the actuality of serious losses resulting from the practice of providing protection against war risk to cargoes while on shore, by extending the coverage from warehouse to warehouse to coincide with the marine policy. By chance, the majority of losses which resulted from this peacetime practice fell on the nonmarine market. Nonetheless, the object lesson was not wasted, and marine underwriters over the world gave serious consideration not only to the dangers inherent in any shore coverage against war perils, but also to the possibility of catastrophic losses from aerial bombing. In World War I, and prior, if a ship made harbour, its worries were largely over, but this was no longer true. The first step was to eliminate war risk shore coverage in areas of active conflict. This was followed, on Feb. 1, 1938, by a decision to limit war risk protection to "waterborne only," even to the extent of restricting the coverage to the overseas vessel.

As the war clouds continued to spread from the far east and Europe, it became increasingly apparent that a major war would bring disruptions that would necessitate a large degree of independence from reinsurance. In Great Britain, "king's enemy" risks were reinsured by the government. In the United States, practically all underwriters pooled their resources in a reinsurance exchange. In Sept. 1939 the British War Risk Insurance office started operation. In the spring of 1942 the U.S. War Shipping administration established a wartime insurance division, but acted through private companies as agents. The private market, however, continued very active as respects cargo war risk insurance. Other interesting developments were the establishment in 1939 in the United States of a fund of \$40,000,000 by Lloyd's to provide dollar funds from which to pay losses, and the formation, for security reasons, of the British Insurance Communications office, known as "Bico," for channelling necessary information.

Hull war risk was absorbed by the U.S. and British

governments as the entire merchant marine was requisitioned by the respective Allied governments which prevented, quite properly, the divulging of routing so necessary to an underwriter. Also, the nazi submarine activity off the east coast of the United States, especially in the spring of 1942, had wiped out the underwriting profit of 20-odd years of the American Hull syndicate, necessitating a scale of rates which the War Shipping administration did not consider economically feasible.

With the exception of the entrance of the various governments into the business of war and some marine insurance, the scene remained comparatively static thereafter. Even the shock of Pearl Harbor and the staggering advance of the Japanese across the Pacific and Indian oceans did not necessitate a change in the mechanics of war risk insurance.

As a result of the Spanish Civil War, all underwriters decided to remove the ancient risk of piracy from the marine policy and place it under the war policy. Drastic changes in insuring conditions also resulted from the decision of the house of lords in the "Coxwold" case, (Yorkshire Dale Steamship Co. Ltd. v. Minister of War Transport—1942 Appeal Cases 691.) The effect of this ruling was to hold war risk underwriters responsible for some hazards previously thought covered under marine policies. The British market met the situation by redefining the F. C. & S. clause so as to place such hazards plainly under the marine policy. The U.S. market took the opposite action, by placing the risks under the war policy.

Conditions, directly the result of the war, increased immeasurably the hazards of navigation. Briefly, vessels sailing in convoy and without lights, maintaining radio silence, lack of weather reports, extinguishing of lighthouses, removal of buoys and other aids to navigation, created a situation whereby the insurance against sea perils had to be compensated for by higher premiums by way of surcharges.

For security reasons shippers were prevented from complying with the provisions in marine policies to notify underwriters of deviations, etc. To solve this difficulty clauses were adopted known as the marine extension clauses or combined marine surcharge, which extended the policy automatically during any occurrence beyond the control of the assured. In consideration of this coverage underwriters assessed an additional premium on all shipments which were combined with the aforementioned surcharges for simplicity of handling.

Following cessation of hostilities, other causes of losses began to appear. This condition became world-wide. Probably the Philippines and the far east presented the worst picture, where thefts assumed the proportions of organized looting. Even in the great port of New York, thefts and pilferages of cargoes were deplorable. The situation became so serious that a bureau was formed by shipowners, underwriters, railroads, warehousemen and other maritime interests, backed by a considerable sum of money, to approach scientifically the problem of suppression of theft and pilferage.

In the Hull market, the decade witnessed the largest placing in marine insurance history, the builder's risk on the "Queen Elizabeth." This insurance, as well as the navigating risk on the vessel, and its sister ship, the "Queen Mary," were placed through Lloyd's and the British companies, and absorbed, by way of reinsurance, the entire capacity of the world market. The period also marked the

coming of age of the American Marine Hull Insurance syndicate, founded in 1920, with government sanction and moral support, to provide an adequate, domestic market for U.S. shipowners. Over the years the syndicate grew conservatively until at the time of Pearl Harbor it had a capacity of \$4,000,000 for any one hull. During the grim days in the spring of 1942, the height of the German submarine campaign, the syndicate suffered losses in excess of \$25,000,000. Nonetheless, the syndicate continued to grow, and before the end of the war had expanded to include the insuring of foreign hulls, heretofore the almost exclusive prerogative of the London market.

In the U.S. market an agreement, was reached between the War Shipping administration and the syndicate, whereby those vessels which had been operated by their owners under a time form of charter, continued to be insured in the commercial market. The unusual features of this wartime hull agreement were that the syndicate members agreed to limit any underwriting profit to a maximum of 7%, but placed no complementary stop-loss provision in the agreement, and named one rate applicable throughout the world rather than different rates for various trades.

U.S. underwriters watched closely the effects of the South-Eastern Underwriters association case decided by the U.S. supreme court, which made marine insurance for the first time subject to interstate commerce regulation.

All in all, the years 1937-46 marked an important period in marine insurance, both hull and cargo. The industry weathered the war years and emerged stronger and more flexible. Troublesome times were still ahead, with all the uncertainties of drastic economic readjustments and of the huge task of reconstruction. The tools, however, were there and had been successfully tested. (H. C. TN.)

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Hospital Insurance.—The story of hospital insurance in the decade 1937–46 was that of a growing conflict between two ideas, and a surging interest on the part of people everywhere in obtaining advance financial protection against the catastrophic costs of illness. Competition between the theory of state-controlled, compulsory programs and that of privately-operated, voluntary plans heightened during the decade as coverage and interest in both types of protection increased.

In the United States the compulsory idea was late in reaching legislative halls. Not until 1941 was the first version of what eventually became the Murray-Wagner-Dingell bill, hotly debated in 1945 and 1946, introduced in congress by Sen. Arthur Capper of Kansas. Not until 1942 did a state, Rhode Island, pass a compulsory sickness insurance law, and this did not directly include hospitalization coverage. Meanwhile the voluntary programs of Blue Cross, commercial insurance companies and other organizations expanded their membership.

Elsewhere, compulsory programs were well under way before the start of the decade. In England, Germany, Austria, the Scandinavian countries, New Zealand, the Netherlands and other countries, compulsory state-operated systems had been established for upward of two decades before 1937. In most of these countries, the vast majority of the population was early covered by hospital insurance. In most, protection was almost completely disrupted by

World War II, and figures or details of coverage were almost impossible to obtain with accuracy in 1946. Privately-operated plans were almost nonexistent outside the United States

Blue Cross, in the United States and Canada, was almost entirely a social phenomenon of these ten years. On Jan. 1, 1937, there were 534,745 members in a handful of small, scattered, unco-ordinated, nonprofit plans for hospital care. The idea itself, of community-wide plans to permit prepayment of hospital bills through a community agency, was new, and the name "Blue Cross" was just then coming into use in Minnesota.

Indicative of the mushrooming growth of these plans after 1937, under the official sponsorship of the American Hospital association, was the fact that new enrolment during the first 9 months of 1946 was nearly 4,500,000—almost exactly the total number who had been enrolled by Jan. 1, 1940, after up to 8 years of activity by the 63 approved plans then functioning. By the end of 1946, total enrolment in the 87 plans approved by the A.H.A. had reached nearly 26,000,000, and was increasing at the rate of 25,000 persons every working day.

Previously, the problem of how to pay for services needed by individuals, usually without advance knowledge, had been met by many through time payments, aided by public charity and private philanthropy. Inability to pay caused countless decisions to delay hospital care which was badly needed. The idea of voluntary prepayment had been used to a limited extent by individual companies and single hospitals, but not until 1931, in Sacramento, Calif., and 1932, in Newark, N.J., did a group of hospitals combine to offer prepayment to an entire community.

There was no more important development than Blue Cross in the field of medical economics during the decade ending in 1946. Plans functioned as independent, local service organizations, operated on a nonprofit basis with hospital, lay and medical sponsorship, usually under special state enabling legislation. They were required to meet standards set by the A.H.A. By 1946 plans served 45 states (all but Arkansas, Mississippi and South Carolina), seven Canadian provinces and Puerto Rico. Payment for services was made directly to the hospital; in 1946 27% of the income of the nation's general hospitals came from Blue Cross plans on behalf of members.

In 1937 the Julius Rosenwald fund made a grant of \$100,000 to the A.H.A. for research in the field of hospital economics. As a result, the need for co-ordination of the activities of scattered plans became apparent, and the Commission on Hospital Service Plans was established to organize and stimulate their development. This body, which changed its name in 1946 to "Blue Cross commission," took the lead in expanding nonprofit, prepaid health service programs throughout the decade.

Forty-eight of the plans were, in 1946, co-ordinated with 43 parallel nonprofit medical or surgical plans, with more than 4,000,000 members. These plans, covering or allowing credit towards the fees of surgeons, and in many cases some payment for medical service, developed later than hospital service plans. Not until 1945 did membership begin to mount rapidly.

Typically, a Blue Cross plan in 1946 was providing service benefits in member hospitals—3,800 in all plans—regardless of the cost of care needed, for periods averaging about 35 days per year for each member of a family enrolled, and for an additional period of from 30 to 180 days at half credit. Hospital services included care in a semiprivate room, board, including special diets, laboratory, operating room, delivery room, emergency room.

drugs and medicines, dressings and casts and any of a variety of extra services which might include anaesthesia, X-ray, electrocardiograms, physiotherapy, oxygen-therapy, basal metabolism tests, pathology, ambulance, etc. Services covered varied from plan to plan.

To render service to members throughout the world, plans were co-operating in programs covering transfer of members, reciprocal service benefits, enrolment of national firms and other subjects. Coverage was available in any approved general hospital anywhere in the world. Rates averaged about \$.85 per month for an individual and \$2.10 per month for a family.

Although the basic pattern of Blue Cross still involved enrolment of groups of employed persons and their dependents through their places of employment, nearly all plans had begun to offer membership to those who were self-employed, retired or unemployed, or otherwise unable to join through a group. Originally, enrolment came almost entirely from city dwellers, but by 1946 nearly 2,000,000 rural residents had enrolled.

During the entire decade, 1937-46, C. Rufus Rorem served as director of the Blue Cross commission. He submitted his resignation, effective Jan. 1, 1947, however, to become executive director of the newly-formed Hospital council of Philadelphia, Pa. His leadership played a major part in guiding the growth of the movement.

Commercial group hospitalization insurance in the United States had been extended by 1946 to about 8,800,000 persons; another 1,000,000 held individual policies. About 5,500,000 persons held commercial protection against surgical expense, and somewhat less than 500,000 for medical expense. In addition, 1,250,000 persons were members of industrial medical service plans, including hospitalization, but membership in this type of program was declining. Co-operatives and group clinics providing for hospital care covered about 600,000, but this type of program showed relatively little growth during the period.

Commercial-type programs differed from Blue Cross hospital service plans in that they offered protection on an "indemnity" rather than a "service" basis. Typical commercial group hospital programs covered from 30 to 71 days of care with a room allowance of \$5 or \$6 and up to \$50 or \$60 for extra services, such as laboratory, X-ray, anaesthesia, etc. It was not possible to continue membership after leaving the employed "group." Payments were made to the insured individual rather than to the hospital.

In addition to the above, some 6,000,000 persons carried commercial group accident and health insurance, some of which provided some coverage for certain types of hospitalization.

Legislative interest in hospital insurance in the United States centred principally in the various bills introduced by Senators Robert F. Wagner and James E. Murray, and Congressman John D. Dingell, and the 1946 proposals of Senators Robert A. Taft, Joseph H. Ball and H. Alexander Smith. The former proposals would include flat per diem allowances toward the cost of hospital care in an expanded social security program. Although frequently introduced after 1941, and supported by Presidents Roosevelt and Truman, none of the bills was ever discharged from committee. The most extensive hearings were held in 1946.

The Taft-Ball-Smith bill embodied grants-in-aid to state-approved programs, which could be Blue Cross, for medical and hospital aid to those deemed "medically indigent," supported by general taxation.

Several states proposed or passed laws touching on the

subject. Rhode Island added a sickness indemnity to its unemployment compensation program. California required all employed persons to carry sickness insurance with a private carrier or through the state-established fund. Although these acts were not strictly "hospital" insurance, they were the closest approaches to such a program actually adopted in any state, and were intended to help compensate for loss of income or expense of serious illness including hospitalization.

At the end of 1946, union-operated health and welfare programs, including hospital insurance through Blue Cross or commercial carriers, were increasingly included in labour agreements. A notable example was that of the United Mine Workers.

(A. G. S.)

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Insurance, Crop

See AGRICULTURE.

Integralism

See PHILOSOPHY.

Inter-Allied Debts

See WAR DEBTS (WORLD WAR I).

Inter-American Affairs, Office of (Coordinator of)

See WAR AND DEFENSE AGENCIES.

Inter-American Conferences

See Pan-American Conferences, 1937-46.

Inter-American Highway

See ROADS AND HIGHWAYS.

Inter-American Organizations

See International Organizations.

Intergovernmental Committee on Refugees

See International Organizations.

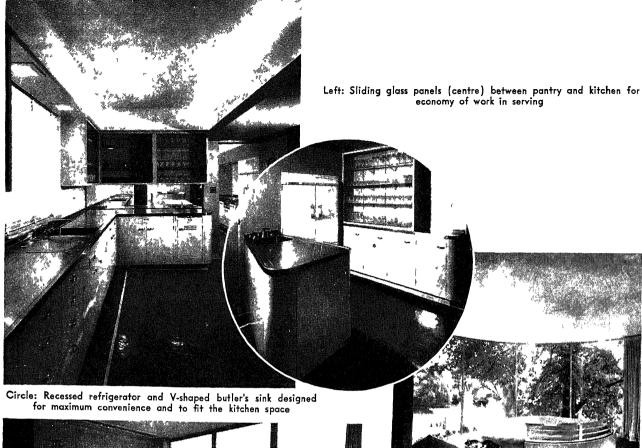
Interior, U.S. Department of

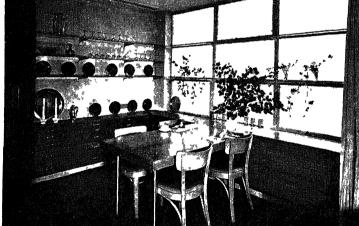
See GOVERNMENT DEPARTMENTS AND BUREAUS.

Interior Decoration

In 1937 interior decoration was experiencing normal evolution of ideas and methods geared to a corresponding evolution in public acceptance. This normal progression stopped in most countries during World War II.

The following period (after 1939 in Europe and after 1941 in the United States) was characterized by improvisation, by temporary arrangements suitable to the flux of living conditions, by lack of interchange of ideas and materials among countries (except to a small extent among the Americas), by ingenious utilization of local materials, and by a tendency to confine limited manufacture to simple contemporary design while at the same time reviving





Above: Bed designed to conform to circular shape of room, with attached control table for radio and telephone

Above: Dinette emphasizing the simplicity and beauty of wood with ornamental work, shelf supports, drawer handles and legs of table made of brass

Right: Functional design in built-in cabinets for dining area and tile floored alcove for the fireplace



(in the U.S.) a modified form of the Victorian décor of the '90s, numerous examples of which were available in reparable state.

Although the building of new homes was negligible, there was a limited amount of remodelling which showed increasing emphasis on fenestration—the use of double-pane vacuum-sealed "picture windows," for instance; on well-organized kitchens; on elimination of the separate dining room in small homes; on practical well-designed storage space as an integral part of the room; and on the elimination of all nonessentials. There was a tendency for the architect to direct the interior decoration of the house of contemporary design.

Textiles.—In France very fine printed textiles were developed about 1937, using contemporary design, on silk to a great extent. At the same time Germany and the Scandinavian countries had on the market a variety of new textiles emphasizing open weaves and textures developed by the employment of twisted, textured yarns. In the U.S. the use of glass fibre threads, synthetic threads and laminated plastic on fabric already was established.

With the spread of war, little of importance in the textule field was developed except in Central and South America and in a limited way in the U.S., notably in California. Primitive designs woven in Bolivia, Chile and Peru were imported in small quantity into the U.S. In Mexico the printed woollens and cottons from Cuernavaca were recognized as a particularly significant contribution. California experimented successfully with tinsels, metals, plastics and novel yarns, producing materials in unusual weaves which found wide popular favour.

During the war textiles played an important role as a flexible and simple means of decoration. Window curtains were relied upon to set the decorative scheme. The ruffled cottage curtain continued in vogue but simple curtains of rayon, plastics and coarse weaves increased in popularity. Upholstery material was severely limited, but slip covers were widely used to cover old furniture or to brighten a room. The demand far exceeded the supply of material. Textiles were also used as wall coverings and were effectively installed on runners to divide rooms at any time desired. The use of table mats in decorative weaves employing novel materials supplanted traditional table linen to a great extent.

Rugs.—In England, western Europe and Scandinavia, prior to World War II, texture rugs were developed and fur was also used. The U.S. likewise was producing twisted piles and open weaves in cotton and wool, and stressing simple reversible rugs. During the war colours were limited to a few stock shades and output was very limited. A few black sheep rugs were imported from South America. Oriental rugs in stock continued to be used throughout the war, but the trend toward simple texture rugs increased. The completely carpeted floor became uncommon. Plastic-coated paper rugs, thick, cheap, washable, reversible and sturdy, were developed in the U.S.

Furniture.—Throughout the decade 1937-46 there was a substantial demand for traditional furniture in the U.S., but at the same time a great increase in demand for contemporary design. Before the war "Swedish Modern" was widely available through retail outlets and exerted an influence on popular taste. Early American and 18th century antiques and reproductions were in steady demand, and about 1938 there was a brief revival of Regency. Later there was a revival of late Victorian, stimulated by the fact that there was still an abundance of originals which could be rebuilt and redecorated despite raw material shortages. The trend toward built-in and sectional furniture in-

creased. The work of Eero and Eliel Saarinen and Charles Eames at Cranbrook, Michigan, in making laminated plywood furniture in functional forms was of significance. In New York, Artekpascoe (of Finnish derivation) made furniture and accessories based on simplified traditional structure and characterized by simple upholstery including natural hides.

There was a healthy and fresh tendency to bring the outdoors indoors by means of fenestration and decorative plants and, equally where possible, to bring the indoors outdoors, making patios and terraces into outdoor rooms. The demand for outdoor furniture increased, but standardized metal furniture in chrome-steel, aluminum and iron was difficult to obtain during the war years. Some very attractive sturdy outdoor furniture of handwoven cane and reed on natural wood frames was made in Mexico.

Walls.—Wall surfaces were, for the most part, treated very simply during the decade. The most common base was plaster and, where old paper was impossible to replace, the application of one coat of casein paint was popular. Because of the shortage of pigments, "wallpaper paints" were confined to pastel mat tones and there was a tendency also to align the woodwork to the wall tone. Very little wallpaper was designed or manufactured because of wartime shortages. An absolutely stainproof washable paper was produced. Blown-up photographs were used effectively as murals.

Plywood proved an attractive and desirable wall surface because of low maintenance costs. Likewise, the application of veneers to insulating materials proved practical and effective. Veneers of strong pattern were artificially developed by powerful bleaches.

Common brick and tile for interior walls were used; both these materials were highly practical, being low in cost as well as interesting in texture. In brick or tile construction neither side of the material required surface treatment and one wall served as two. Corrugated glass and various translucent plastics, as well as glass brick, were widely used in wall treatment, not only in limited new building but also in modernization of old units. Screens of light-weight materials in simple wood frames were a popular means of dividing rooms.

Floors.—The favoured material for flooring continued to be traditional hardwood. However, tile and brick were used successfully and were more in demand because of shortages in seasoned hardwood. There was a steady demand for inlaid linoleum, very little of which was available. The importation of cork was entirely cut off by the war.

Lighting.—Throughout World War II the use of tubular fluorescent lighting mounted steadily. Cove and indirect lighting—important factors in contemporary interiors—were logical methods for utilizing the slm line structure of the fluorescent tube. It was also used over windows to reflect the colour or decorative pattern value of curtains. Its cheaper maintenance and cool light further recommended it to the general public. Spot and pin-aperture lighting were also used to create facets in the total composition of an interior. The trend toward unobtrusive light sources and the dramatic use of light itself was marked. Ceiling fixtures and side brackets were becoming outdated. Some floor and table lamps were also designed for indirect light with ceiling floods, movable arms and generally more functional shape.

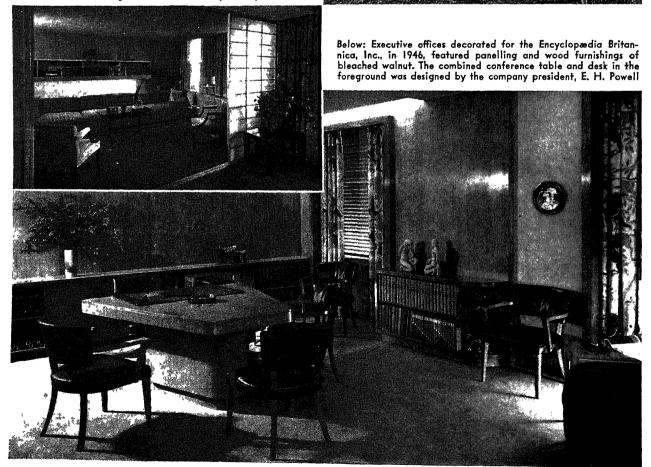
Ceramics.—The ten years 1937-46, with their stress on informal living, saw a revival of earthenware ceramic table-



Above: Architectural table unit in the foreground houses air conditioning ducts and forms the background for a sofa

Right: Living room emphasizing simple use of materials with recessed brass flower holders in the table, plastic table top and built-in sofa

Below: Living room showing the adaptation of traditional furniture with modern background and modern upholstery materials



ware and decorative bowls, vases, figurines and miscellaneous vessels. Whereas the majority was mass-produced, there was a lively demand for the more differentiated product of individual potter-craftsmen, working alone or with small staffs. This encouraged a limited renascence of the craft in Europe and in the U.S., particularly in the far west and east. Good shapes and good glazes were developed in spite of wartime shortages of chemicals. In England, Bernard Leach did important work in re-establishing the Chinese and Japanese tradition as a basis for western development. Ceramics as an art form sold well in galleries and museums. Inexpensive mass-produced tableware in gay colours, as in fiesta ware, or in good contemporary design, as in the Russell Wright line, found great popular demand.

Plants.—The decorative value and interest of large leaf plants such as Ficus Pendurata and the use of climbing or trailing plants such as Philodendron Cordatum or Philodendron Pertussum which thrive with proper care in city or country were demonstrated particularly in interiors of contemporary design where a single large plant was often a feature of a planned room.

Public Buildings.—There was very little public building during the decade, but some projects were completed in the U.S. before the war. Almost all were executed in contemporary design, using basic materials such as brick, tile and metal sash with honest exploitation of their intrinsic decorative values. Fenestration was used either to the limit or else practically eliminated by means of air-conditioning and controlled lighting. (G. M. J.)

International Bank for Reconstruction and Development

The International Bank for Reconstruction and Development was established in 1945 as one of three principal organs of world economic policy, the others being the International Monetary Fund (q.v.) and the International Trade organization. Shortly after Pearl Harbor, technicians of the United States and other United Nations, seeking to provide the economic basis for the type of postwar world for which the nations were fighting, began to exchange ideas and plans for institutions designed for international monetary co-operation and management and the financing of reconstruction and development. The United Nations Monetary and Financial conference at Bretton Woods in July 1944 formulated agreements for the International Monetary Fund and the International bank which, on being accepted by the requisite number of nations, were declared operative on Dec. 27, 1945. The inaugural meetings of the boards of governors of the two institutions were held at Savannah, Georgia, in March 1946, and the first regular annual meeting was held in Washington in Sept. 1946. The bank's executive directors had been in continuous session since May 7, 1946, in Washington, D.C., site of the bank's principal office.

The purposes of the bank were outlined as follows: to assist in the reconstruction and development of member nations by facilitating investment of capital for productive purposes; to promote private foreign investment by means of guarantees or participations in loans and other investments made by private investors, and when private capital is not available on reasonable terms to supplement private investment by providing finance out of resources available to it; and to promote the long-range balanced growth of international trade and the maintenance of equilibrium in balances of payments by encouraging international investment for the development of the productive resources of members. The authorized capital of the bank was \$10,000,000,000,000. The total of its outstanding loans and

guarantees could not exceed its subscribed capital, reserves and surplus. The bank at the end of 1946 had 40 member countries who had subscribed for a total of \$7,790,500,000. Membership in the bank remained open until Dec. 31, 1946, for those countries which participated in the Bretton Woods conference. Other nations could be admitted by the board of governors.

The subscribed capital consisted of two parts—20% to serve as the bank's working capital (one-half of the 20% called for payment by Nov. 25, 1946) and 80% to be held and called only to make good on the bank's outstanding obligations or guarantees.

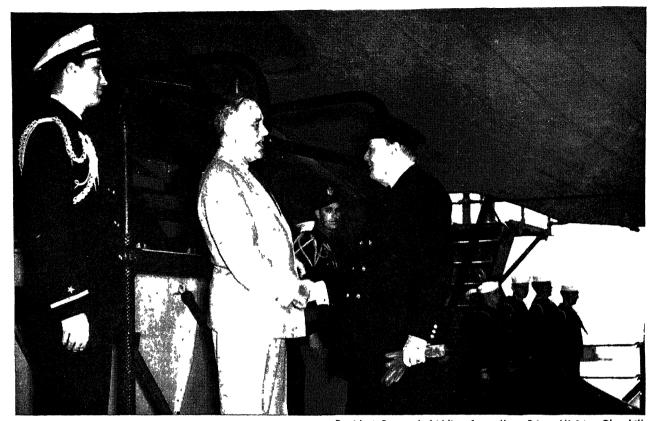
The bank was authorized to make or facilitate loans in the following ways: (1) by making direct loans out of its own funds corresponding to its unimpaired paid-up capital, surplus and reserves; (2) by making direct loans out of funds raised in the market of a member country, or otherwise borrowed; and (3) by guaranteeing in whole or in part loans made by private investors through the usual investment channels. Loans made or guaranteed by the bank had to be, in general, for specific projects or programs of reconstruction or development. In accordance with this principle, the bank had to make arrangements to insure that the proceeds of each loan were used only for the purposes for which the loan was granted. Competent technical committees appointed by the bank were required to make a careful study of the merits of each proposed loan, and the executive directors could not make the loan unless the committee had submitted a written report recommending it. On every loan made or guaranteed by the bank which was not a direct obligation of a member country-that is, where the loan was made to a political subdivision or a private enterprise within the country-the repayment of principal and the payment of interest and other charges had to be fully guaranteed by the member government or its central bank or some comparable agency acceptable to the International bank. The interest rate, other charges, and schedule of principal repayment were required to be "appropriate to the project," and the bank had to pay due regard to the prospects of the borrower's position to meet its obligations under the loan.

The International bank by the fall of 1946 had established the framework of its organization and was considering the first application for loans submitted to it. (See also Banking; Exchange Control and Exchange Rates; International Conferences, Allied (World War II); International Monetary Fund; Tariffs; United Nations.)

(Em. G. C.)

International Conferences, Allied (World War II)

In spite of Adolf Hitler's oft-repeated assurances to the world that he planned no military conquests, war seemed imminent in the early days of 1938. At conferences such as those of the Scandinavian neutrals at Stockholm in May 1938 and the meetings of representatives of Pan-American states, considerations for future courses of action in the event of world conflict occupied much attention. (For a discussion of the latter conferences prior to and during World War II, see PAN-AMERICAN CON-FERENCES, 1937-46.) Such meetings, however, were mostly regional until the historic Atlantic Charter meeting of Prime Minister Winston Churchill and President Franklin D. Roosevelt, some four months before Pearl Harbor. Beginning with that meeting, the present article lists the principal Allied conferences during the course of the war, and the major decisions of each.



President Roosevelt bidding farewell to Prime Minister Churchill after the historic Atlantic Charter meeting at sea in Aug. 1941. The President was accompanied by his sons Franklin, Jr. (left) and Elliott (centre background)

The Atlantic Charter.-President Roosevelt and Prime Minister Churchill of Great Britain held their first wartime meeting on Aug. 9 and 10, 1941, at sea, alternately aboard the U.S. cruiser "Augusta" and the British warship "Prince of Wales." During these meetings an 8-point declaration was formulated and issued officially on Aug. 14 as the Atlantic Charter. This document declared:

The President of the United States of America and the Prime Minister, Mr. Churchill, representing His Majesty's Government in the United Kingdom, being met together, deem it right to make known certain common principles in the national policies of their respective countries on which they base their hopes for a better future for the world.

First, their countries seek no aggrandizement, territorial or

Second, they desire to see no territorial changes that do not accord with the freely expressed wishes of the peoples concerned:

Third, they respect the right of all peoples to choose the form of government under which they will live; and they wish to see sovereign rights and self-government restored to those who have been forcibly deprived of them;

Fourth, they will endeavor, with due respect for their existing obligations, to further the enjoyment by all States, great or small, victor or vanquished, of access, on equal terms, to the trade and to the raw materials of the world which are needed for their economic prosperity;

Fifth, they desire to bring about the fullest collaboration between all nations in the economic field with the object of securing, for all, improved labor standards, economic adjustment and social security;

Sixth, after the final destruction of the Nazi tyranny, they hope to see established a peace which will afford to all nations the means of dwelling in safety within their own boundaries, and which will afford assurance that all the men in all the lands may live out their lives in freedom from fear and want;

Seventh, such a peace should enable all men to traverse the

high seas and oceans without hindrance;

Eighth, they believe that all of the nations of the world, for realistic as well as spiritual reasons, must come to the abandonment of the use of force. Since no future peace can be main-

tained if land, sea or air armaments continue to be employed by nations which threaten, or may threaten, aggression outside of their frontiers, they believe, pending the establishment of a wider and permanent system of general security, that the disarmament of such nations is essential. They will likewise aid and encourage all other practicable measures which will lighten for peace-loving peoples the crushing burden of arma-

First United Nations Conference.—On Jan. 1, 1942, Prime Minister Churchill, after a three-day visit in Ottawa, Canada, arrived in Washington, D.C., to discuss military, financial, economic and supply problems with President Roosevelt. At this meeting, on Jan. 2, representatives of 26 countries at war with the axis nations signed a declaration by the United Nations pledging themselves not to conclude a separate peace and to prosecute the war with their full military and economic resources. The original signatories of this pact, besides President Roosevelt and Prime Minister Churchill, were representatives of Australia, Belgium, Canada, China, Costa Rica, Cuba, Czechoslovakia, Dominican Republic, El Salvador, Greece, Guatemala, Haiti, Honduras, India. Luxembourg, the Netherlands, New Zealand, Nicaragua. Norway, Panamá, Poland, South Africa, the U.S.S.R. and Yugoslavia, (See United Nations.) Following is the text of the final part of the declaration:

- (1) Each government pledges itself to employ its full resources, military or economic, against those members of the Tripartite Pact and its adherents with which such government
- (2) Each government pledges itself to co-operate with the governments signatory hereto and not to make a separate armistice or peace with the enemies.

Casablanca Conference.-On Jan. 15, 1943, President

Roosevelt and Prime Minister Churchill met at Casablanca, French Morocco, for a ten-day meeting at which Generals Charles de Gaulle and Henri Giraud of France participated. Here it was decided to take the initiative in the war, and to accept nothing short of unconditional surrender from the axis nations. It was further agreed that these representatives would confer later with Premier Joseph Stalin of the U.S.S.R., and to supply material aid to that country and to China. Another stated objective was to unite the French in the war against the axis.

Washington ("Trident") Conference.-Prime Minister Churchill arrived in Washington, D.C., on May 11, 1948,1 for a series of conferences (known by the code name of "Trident") with President Roosevelt on the future prosecution of the war. On May 27, President Roosevelt announced that Great Britain and the United States had reached full agreement on all phases of future operations. As later revealed in the 1945 biennial report of General George C. Marshall, the "specific strategy of the global war" was conceived at this conference, and it was determined to speed up the campaign against Japan. The Burmese campaign of the following fall was laid out, and plans were approved to increase the air route capacity over "the Hump" to 10,000 tons a month (later increased to 20,000 at the First Quebec conference). The conferees also agreed upon the invasion of France from Great Britain.

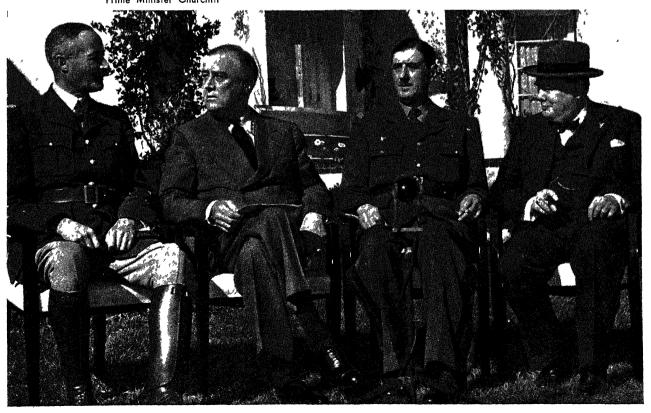
First Quebec ("Quadrant") Conference.—On Aug. 10, 1943, Prime Minister Churchill and Prime Minister King of Canada met at Quebec to co-ordinate plans for the invasion of Europe. President Roosevelt arrived on Aug. 17. Secretary of State Cordell Hull and Secretary of State

¹Churchill had made two prior trips to Washington for conferences with President Roosevelt—in Dec. 1941 and June 1942.

The conference at Casablanca, Morocco, where Allied leaders met in Jan. 1943 to discuss European war strategy. Left to right are: Gen. Henri Giraud, Pres. Roosevelt, Gen. Charles de Gaulle and Prime Minister Churchill for Foreign Affairs Anthony Eden also were present at this conference, known as "Quadrant," which lasted until Aug. 24. It was revealed later that the specific routes of the advance against Japan (Gilberts, Marshalls, Marianas, Ryukyus) were determined at this conference. General Henry H. Arnold's plans for air warfare against Japan, detailing the establishment of bases for the B-29 superfortresses, were also approved. The Southeast Asia command under Lord Louis Mountbatten was created. The offensive against southern France, in conjunction with the Normandy campaign, was conceived at "Quadrant."

Moscow Conference (1943).—In Oct. 1943, representatives of the United States, Great Britain and the U.S.S.R. met at the Kremlin and recognized China's position as one of the Big Four powers at war with the axis. On Nov. 1, after 13 days of meetings, the representatives resolved to continue the war until the axis should surrender unconditionally, and pledged unified action for eventual peace and security. They also recognized the need for a general international organization for peace in the nature of a league of nations, and agreed not to maintain their respective armed forces within the territories of other nations after cessation of hostilities. They vowed, furthermore, that Austria should be freed from naziism, that Italy should be democratized and that war criminals should be returned to the scene of their crimes for trial and punishment. This agreement, signed by the United States, Great Britain and the U.S.S.R., was later ratified by the United States senate by a vote of 85 to 5. The full text of the agreement on Italy was as follows:

The foreign secretaries of the United States, the United Kingdom and the soviet union have established that their three governments are in complete agreement that Allied policy toward Italy must be based upon the fundamental principle that fascism and all its evil influence and configuration shall be completely destroyed and that the Italian people shall be given



every opportunity to establish governmental and other institu-688 tions based upon democratic principles.

The foreign secretaries of the United States and United Kingdom declare that the action of their governments from the inception of the invasion of Italian territory, in so far as paramount military requirements have permitted, has been based upon this policy.

In furtherance of this policy in the future the foreign secretaries of the three governments are agreed that the following measures are important and should be put into effect:

(1) It is essential that the Italian government should be made more democratic by inclusion of representatives of those

sections of the Italian people who have always opposed fascism.

(2) Freedom of speech, of religious worship, of political belief, of press and of public meeting shall be restored in full measure to the Italian people, who shall also be entitled to form anti-fascist political groups.

(3) All institutions and organizations created by the fascist

regime shall be suppressed.

(4) All fascist or pro-fascist elements shall be removed from the administration and from institutions and organizations of a public character.

(5) All political prisoners of the fascist regime shall be re-leased and accorded full amnesty.

(6) Democratic organs of local government shall be created. (7) Fascist chiefs and army generals known or suspected to be war criminals shall be arrested and handed over to justice.

In making this declaration the three foreign secretaries recognize that so long as active military operations continue in Italy the time at which it is possible to give full effect to the principles stated above will be determined by the commanderin-chief on the basis of instructions received through the combined chiefs of staff.

The three governments, parties to this declaration, will, at the request of any one of them, consult on this matter. It is further understood that nothing in this resolution is to operate against the right of the Italian people ultimately to choose their own form of government.

Following is the text of the declaration on Austria signed at Moscow:

The governments of the United Kingdom, the soviet union and the United States of America are agreed that Austria, the first free country to fall a victim to Hitlerite aggression, shall be liberated from German domination.

They regard the annexation imposed on Austria by Germany on March 15, 1938, as null and void. They consider themselves as in no way bound by any changes effected in Austria since that date. They declare that they wish to see reestablished a free and independent Austria and thereby to open the way for the Austrian people themselves, as well as those neighbouring states which will be faced with similar problems, to find that political and economic security which is the only basis for lasting peace.

Austria is reminded, however, that she has a responsibility, which she cannot evade, for participation in the war at the side of Hitlerite Germany, and that in the final settlement account will inevitably be taken of her own contribution to her liberation.

Cairo ("Sextant") Conference. - President Roosevelt, Prime Minister Churchill and Generalissimo Chiang Kaishek agreed, at Cairo, Egypt, Nov. 22-26, 1943, on military plans against Japan. In a statement dated Dec. 1, the three nations determined "that Japan shall be stripped of all the islands in the Pacific which she has seized or occupied since the beginning of the first World War in 1914, and that all the territories Japan has stolen from the Chinese, such as Manchuria, Formosa and the Pescadores, shall be restored to the Republic of China." They further resolved that Korea should "in due course . . . become free and independent."

Tehran Conference.-From Cairo President Roosevelt and Prime Minister Churchill flew to Tehran, Iran, to meet Marshall Stalin in a 4-day conference, Nov. 28 to Dec. 1, 1943. Here they formulated plans for an all-out attack on Hitler's European bastion, and agreed on the scope and timing of their assault on the axis. Iran's



Far eastern strategy was the subject of most discussions at the Cairo conference in Egypt during Dec. 1943. Pres. Roosevelt and Prime Minister Churchill posed informally between meetings, with Pres. Ismet Inonii of Turkey (centre)

assistance to the Allied cause was recognized, and aid was promised this nation in its resistance to axis threats. From Tehran, Roosevelt and Churchill returned to Cairo, where they conferred with President Ismet Inönü of Turkey. Dec. 4-6, 1943, for the purpose of strengthening Turkey's stand against the axis.

Following is the declaration adopted at Tehran regarding Iran's status:

The President of the United States of America, the Premier of the U.S.S.R. and the Prime Minister of the United Kingdom, having consulted with each other and with the Prime Minister of Iran, desire to declare the mutual agreement of their three governments regarding relations with Iran.

The governments of the United States of America, the U.S.S.R. and the United Kingdom recognize the assistance which Iran has given in the prosecution of the war against the common enemy, particularly by facilitating the transportation of supplies from overseas to the soviet union. The three governments realize that the war has caused special economic difficulties for Iran and they agreed that they will continue to make available to the Iran government such economic assistance as may be possible, having regard to the heavy demands made upon them by their world-wide military operations and to the world-wide shortage of transport, raw materials and supplies for civilian consumption.

With respect to the postwar period, the governments of the United States of America, the U.S.S.R. and the United Kingdom are in accord with the government of Iran that any economic problem confronting Iran at the close of hostilities should receive full consideration along with those of other members of the United Nations by conferences or international agencies, held or created, to deal with international economic matters.

The governments of the United States of America, the U.S.S.R. and the United Kingdom are at one with the government of Iran in their desire for the maintenance of the independence, sovereignty and territorial integrity of Iran. They count upon the participation of Iran, together with all other peace-loving nations in the establishment of international peace, security and prosperity after the war, in accordance with the principles of the Atlantic Charter, to which all four governments have continued to subscribe.

At the time of the Tehran conference, Turkey's entrance into the war on the side of the Allies was held very desirable. Toward this end, a secret agreement was signed by the Big Three which remained undisclosed until March 25, 1947. It provided that in pertinent negotiations with

Turkey, it was to be stated that if hostilities opened between Turkey and Germany followed by an attack on the former by Bulgaria, "the soviet would immediately be at war with Bulgaria."

Dumbarton Oaks Conference.—(See UNITED NATIONS.) Second Quebec ("Octagon") Conference.—On Sept. 16, 1944, President Roosevelt and Prime Minister Churchill concluded their second Quebec conference, in which they pledged the Allies to shift their full force to the Pacific theatre of war to defeat Japan as soon as Germany should surrender. At this conference, known as "Octagon," General Douglas MacArthur was directed to advance the "target date" of the Philippines invasion to Oct. 20, 1944.

Crimea or Yalta ("Argonaut") Conference.-From Feb. 4 to 11, 1945, President Roosevelt and Prime Minister Churchill and their advisers conferred with Marshal Stalin in the Crimea, near Yalta on the Black sea coast. Previously, Churchill and Roosevelt had met at Malta in the Mediterranean. The conference at Yalta was concerned with achieving closer co-ordination among the Big Three and formulating final plans for the defeat of the common enemy. Policies were agreed upon for enforcing the unconditional surrender of Germany, although the terms of such surrender were to remain secret until after the final defeat. Other decisions reached were: that Germany should be divided into zones to be occupied and policed under "co-ordinated administration" by the armed forces of the Big Three, a fourth zone being offered to the French for their administration if that country should so desire; that a commission on German reparations should be set up in Moscow; that the first conference of the United Nations should convene in San Francisco on April 25, 1945; and that there should be regular consultation of the Big Three foreign secretaries, "probably about every three or four months." Finally, three important statements of policy were issued regarding the nations of liberated Europe, the new Polish frontiers and the Tito government in Yugoslavia. The text of these three agreements, dated Feb. 11, 1945, is set forth below:

Declaration on Liberated Europe

The Premier of the Union of Soviet Socialist Republics, the Prime Minister of the United Kingdom, and the President of the United States of America have consulted with each other in the common interests of the peoples of their countries and those of liberated Europe. They jointly declare their mutual agreement to concert during the temporary period of instability in liberated Europe the policies of their three governments in assisting the peoples liberated from the domination of Nazi Germany and the peoples of the former Axis satellite states of Europe to solve by democratic means their pressing political and economic problems.

The establishment of order in Europe and the rebuilding of national economic life must be achieved by processes which will enable the liberated peoples to destroy the last vestiges of Naziism and Fascism and to create democratic institutions of their own choice. This is a principle of the Atlantic Charter—the right of all peoples to choose the form of government under which they will live—the restoration of sovereign rights and self-government to those peoples who have been forcibly deprived of them by the aggressor nations.

To foster the conditions in which the liberated peoples may exercise these rights, the three governments will jointly assist the people in any European liberated state or former Axis satellite state in Europe where in their judgment conditions require (A) to establish conditions of internal peace: (B) to carry out emergency measures for the relief of distressed peoples; (C) to form interim governmental authorities broadly representative of all democratic elements in the population and pledged to the earliest possible establishment through free elections of governments responsive to the will of the people; and (D) to facilitate where necessary the holding of such elections.

The three governments will consult the other United Nations and provisional authorities or other governments in Europe

when matters of direct interest to them are under considera-

When, in the opinion of the three governments, conditions in any European liberated state or any former Axis satellite state in Europe make such action necessary, they will immediately consult together on the measures necessary to discharge the joint responsibilities set forth in this declaration.

By this declaration we reaffirm our faith in the principles of the Atlantic Charter, our pledge in the declaration by the United Nations, and our determination to build in cooperation with other peace-loving nations world order under law, dedicated to peace, security, freedom and general well-being of all mankind.

In issuing this declaration, the three powers express the hope that the Provisional Government of the French Republic may be associated with them in the procedure suggested.

Poland

A new situation has been created in Poland as a result of her complete liberation by the Red Army. This calls for the establishment of a Polish provisional government which can be more broadly based than was possible before the recent liberation of Western Poland. The provisional government which is now functioning in Poland should therefore be reorganized on a broader democratic basis with the inclusion of democratic leaders from Poland itself and from Poles abroad. This new government should then be called the Polish Provisional Government of National Unity.

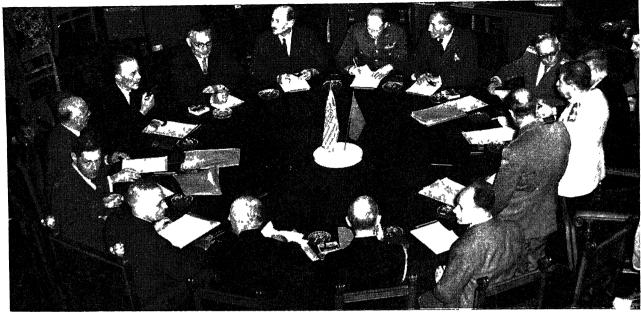
M. Molotov, Mr. Harriman and Sir A. Clark Kerr are author-

M. Molotov, Mr. Harriman and Sir A. Clark Kerr are authorized as a commission to consult in the first instance in Moscow with members of the present provisional government and with other Polish democratic leaders from within Poland and from abroad, with a view to the reorganization of the present government along the above lines. This Polish Provisional Government of National Unity shall be pledged to the holding of free and unfettered elections as soon as possible on the basis of universal suffrage and secret ballot. In these elections all democratic and anti-Nazi parties shall have the right to take part and to put forward candidates.

When a Polish Provisional Government of National Unity has been properly formed in conformity with the above, the government of the U.S.S.R., which now maintains diplomatic relations with the present provisional government of Poland, and the government of the United Kingdom and the government of the U.S.A. will establish diplomatic relations with the

Yalta airport in the Crimea, shortly after British end U.S. leaders arrived in Feb. 1945 to confer with Marshal Stalin on plans for postwar Europe. At attention during the playing of the Russian anthem are, left to right: Secretary of State Stettinius, Foreign Commissar Molotov, Prime Minister Churchill and Pres. Roosevelt





new Polish Provisional Government of National Unity, and will exchange ambassadors by whose reports the respective governments will be kept informed about the situation in Poland.

The three heads of government consider that the Eastern frontier of Poland should follow the Curzon line with digressions from it in some regions of five to eight kilometres in favour of Poland. They recognize that Poland must receive substantial accessions of territory in the North and West. They feel that the opinion of the new Polish Provisional Government of National Unity should be sought in due course on the extent of these accessions and that the final delimitation of the western frontier of Poland should thereafter await the peace conference.

Yugoslavia

We have agreed to recommend to Marshal Tito and Dr. Subasic that the agreement between them should be put into effect immediately, and that a new government should be formed on the basis of that agreement.

We also recommend that as soon as the new government has been formed it should declare that:

(1) The anti-Fascist assembly of National Liberation (Avnoj) should be extended to include members of the last Yugoslav Parliament (Skupschina) who have not compromised themselves by collaboration with the enemy, thus forming a body to be known as a temporary Parliament; and;

(2) Legislative acts passed by the anti-Fascist Assembly of National Liberation will be subject to subsequent ratification by a constituent assembly

by a constituent assembly.

There was also a general review of other Balkan questions.

In addition, a series of secret agreements were reached which were not made public in their entirety until March 1947. Chief among them were provisions concerning the dismemberment of Germany, a recommendation that the Montreux convention, under which Turkey controlled the Black sea straits, be considered at a future date for possible revision, and details of the plan for German reparations in kind. These last were to consist of the removal of German goods (including external assets) within two years of its surrender, annual deliveries from current production for a period to be decided upon and German labour. The sum total for the first two classes of reparations suggested by the U.S.S.R. as a provisional basis for future discussions was set at \$20,000,000,000, half of which was to go to the U.S.S.R. Great Britain dissented, suggesting that no figure be set in advance of discussions to be held at Moscow. An agreement was also reached whereby the U.S.S.R. was to enter the war against Japan within two or three months of the German surrender. Chief among the conditions for

The International Conference at Berlin (Potsdam) was resumed on July 28, 1945, after results of the British elections were announced. Prime Minister Attlee is at far side of table, centre; Marshal Stalin stands at right; President Truman is in left foreground

such participation were (1) the cession to the U.S.S.R. of the Kurile Islands and the southern part of Sakhalin as well as adjacent islands, (2) internationalization of the port of Dairen, (3) restoration to the U.S.S.R. of the lease of Port Arthur as a naval base and (4) joint soviet-Chinese operation of the Chinese-Eastern railroad forming an outlet to the port of Dairen.

Egypt Conference.—Following the Crimea conference President Roosevelt proceeded to Egypt, where he conferred with King Farouk of Egypt, Emperor Haile Selassie of Ethiopia and King Ibn Saud of Saudi Arabia, to cement Allied relations with these powers and reach an understanding on matters of supply and maintenance of shipping routes.

United Nations Conference on International Organization.—For a discussion of this conference, popularly known as the "San Francisco conference" (April 25-June 26, 1945), see United Nations.

Berlin-Potsdam Conference, also called the Tripartite Conference of Berlin.-On July 17, 1945, President Harry S. Truman, Prime Minister Churchill, Clement R. Attlee and Generalissimo Stalin met near Potsdam, a suburb of Berlin. Nine meetings were held between this date and July 25, when they were temporarily adjourned during the British elections. On July 28 Attlee rejoined the conference as successor to Churchill, and discussions were resumed. The members agreed on the establishment of a council of foreign ministers to represent the five principal powers in the preparation of peace treaties and settlements with Italy, Rumania, Bulgaria, Hungary, Finland and Germany; they decided on a plan of exacting reparations from Germany and of governing that country. Further considerations dealt with the disposal of the German navy and merchant marine, treatment of war criminals, the extension of authority of existing provisional Austrian and Polish governments.

Following is the text of the Potsdam agreement:

A. Political Principles.

1. In accordance with the agreement on control machinery in Germany, supreme authority in Germany is exercised on instructions from their respective governments, by the Com-

manders-in-Chief of the armed forces of the United States of America, the United Kingdom, the Union of Soviet Socialist Republics, and the French Republic, each in his own zone of occupation, and also jointly, in matters affecting Germany as a whole, in their capacity as members of the Control Council.

2. So far as is practicable, there shall be uniformity of treat-

ment of the German population throughout Germany.
3. The purposes of the occupation of Germany by which the Control Council shall be guided are:

(i) The complete disarmament and demilitarization of Germany and the elimination or control of all German industry that could be used for military production. To these ends:

(a) All German land, naval and air forces, the S.S., S.A., S.D., and Gestapo, with all their organizations, staffs and in-stitutions, including the General Staff, the Officers' Corps, Reserve Corps, military schools, war veterans' organizations and all other military and quasi-military organizations, together with all clubs and associations which serve to keep alive the military tradition in Germany, shall be completely and finally abolished in such manner as permanently to prevent the revival or reorganization of German militarism and Naziism.

(b) All arms, ammunition and implements of war and all specialized facilities for their production shall be held at the disposal of the Allies or destroyed. The maintenance and production of all aircraft and all arms, ammunition and imple-

ments of war shall be prevented.

(ii) To convince the German people that they have suffered a total military defeat and that they cannot escape responsibility for what they have brought upon themselves, since their own ruthless warfare and the fanatical Nazi resistance have destroyed German economy and made chaos and suffering inevitable.

(iii) To destroy the National Socialist Party and its affiliated and supervised organizations, to dissolve all Nazi institutions, to ensure that they are not revived in any form, and to prevent all Nazi and militarist activity of propaganda.

(iv) To prepare for the eventual reconstruction of German political life on a democratic basis and for eventual peaceful

co-operation in international life by Germany.

4. All Nazi laws which provided the basis of the Hitler regime or established discrimination on grounds of race, creed, or political opinion shall be abolished. No such discriminations, whether legal, administrative or otherwise, shall be tolerated.

5. War criminals and those who have participated in planning or carrying out Nazi enterprises involving or resulting in atroctities or war crimes shall be arrested and brought to judg-ment. Nazi leaders, influential Nazi supporters and high officials of Nazi organizations and institutions and any other persons dangerous to the occupation or its objectives shall be arrested and interned.

6. All members of the Nazi party who have been more than nominal participants in its activities and all other persons hostile to allied purposes shall be removed from public and semi-public office, and from positions of responsibility in important private undertakings. Such persons shall be replaced by persons who, by their political and moral qualities, are deemed capable of assisting in developing genuine democratic institutions in Germany.

7. German education shall be so controlled as completely to eliminate Nazi and militarist doctrines and to make possible

the successful development of democratic ideas.

8. The judicial system will be reorganized in accordance. with the principles of democracy, of justice under law, and of equal rights for all citizens without distinction of race, nationality or religion.

9. The administration of affairs in Germany should be directed towards the decentralization of the political structure and the development of local responsibility. To this end:

(i) Local self-government shall be restored throughout Germany on democratic principles and in particular through elective councils as rapidly as is consistent with military security

and the purposes of military occupation;

(ii) All democratic political parties with rights of assembly and of public discussion shall be allowed and encouraged

throughout Germany;

(iii) Representative and elective principles shall be introduced into regional, provincial and state (land) administration as rapidly as may be justified by the successful application of these principles in local self-government;

(iv) For the time being no central German government shall be established. Notwithstanding this, however, certain essential central German administrative departments, headed by state secretaries, shall be established, particularly in the fields of finance, transport, communications, foreign trade and industry. Such departments will act under the direction of the Control Council.

10. Subject to the necessity for maintaining military security, freedom of speech, press and religion shall be permitted, and religious institutions shall be respected. Subject likewise to the maintenance of military security, the formation of free trade unions shall be permitted.

B. Economic Principles.

11. In order to eliminate Germany's war potential, the production of arms, ammunition and implements of war as well as all types of aircraft and sea-going ships shall be prohibited and prevented. Production of metals, chemicals, machinery and other items that are directly necessary to a war economy shall be rigidly controlled and restricted to Germany's approved post-war peacetime needs to meet the objectives stated in paragraph 15. Productive capacity not needed for permitted production shall be removed in accordance with the reparations plan recommended by the Allied Commission on reparations and approved by the governments concerned or if not removed shall be destroyed.

12. At the earliest practicable date, the German economy shall be decentralized for the purpose of eliminating the present excessive concentration of economic power as exemplified in particular by cartels, syndicates, trusts and other monopo-

listic arrangements.

13. In organizing the German economy, primary emphasis shall be given to the development of agriculture and peaceful domestic industries.

14. During the period of occupation Germany shall be treated as a single economic unit. To this end common policies shall be established in regard to:

(a) Mining and industrial production and allocations; (b) Agriculture, forestry and fishing;

(c) Wages, prices and nationing;

(d) Import and export programs for Germany as a whole; (e) Currency and banking, central taxation and customs; (f) Reparation and removal of industrial war potential;

(g) Transportation and communications.

In applying these policies account shall be taken, where appropriate, of varying local conditions.

15. Allied controls shall be imposed upon the German econ-

omy but only to the extent necessary:

(a) To carry out programs of industrial disarmament and demilitarization, of reparations, and of approved exports and

imports.

(b) To assure the production and maintenance of goods and services required to meet the needs of the occupying forces and displaced persons in Germany and essential to maintain in Germany average living standards not exceeding the average of the standards of living of European countries. (European countries means all European countries excluding the United Kingdom and the Union of Soviet Socialist Republics.

(c) To ensure in the manner determined by the Control Council the equitable distribution of essential commodities between the several zones so as to produce a balanced economy throughout Germany and reduce the need for imports.

(d) To control German industry and all economic and financial international transactions, including exports and imports, with the aim of preventing Germany from developing a war potential and of achieving the other objectives named herein.

(e) To control all German public or private scientific bodies, research and experimental institutions, laboratories, et cetera,

connected with economic activities.

- 16. In the imposition and maintenance of economic controls established by the Control Council, German administrative machinery shall be created and the German authorities shall be required to the fullest extent practicable to proclaim and assume administration of such controls. Thus it should be brought home to the German people that the responsibility for the administration of such controls and any breakdown in these controls will rest with themselves. Any German controls which may run counter to the objectives of occupation will be prohibited.

 - 17. Measures shall be promptly taken:(a) To effect essential repair of transport;

(b) To enlarge coal production;

To maximize agricultural output; and

- (d) To effect emergency repair of housing and essential ntilities.
- 18. Appropriate steps shall be taken by the Control Council

to exercise control and the power of disposition over Germanowned external assets not already under the control of United Nations which have taken part in the war against Germany.

19. Payment of reparations should leave enough resources to enable the German people to subsist without external assistance. In working out the economic balance of Germany the necessary means must be provided to pay for imports approved by the Control Council in Germany. The proceeds of exports from current production and stocks shall be available in the first place for payment for such imports.

first place for payment for such imports.

The above clause will not apply to the equipment and products referred to in paragraphs 4 (A) and 4 (B) of the Reparations Agreement. [The latter paragraphs referred to two secret provisions for soviet reparations claims in the western

zones of occupation, as outlined below.-ED.]

Two other important matters were considered in secret and not made public until March 1947. The first was a declaration that the Montreux convention was out-of-date and recommended for revision to the foreign ministers of the Big Three. The second concerned revision of the plan for German reparations as discussed at Yalta. Chief among the new terms were the agreements that (1) soviet reparation claims were to be met from the soviet zone of occupation except as noted below (all other claims were to be met from the western zones and external German assets); (2) the U.S.S.R. agreed to settle Polish claims from its own share of reparations; (3) in addition to reparations taken by the U.S.S.R. from its own zone of occupation, it was to receive (a) 15% of such industrial capital equipment as could be taken from the western zones of Germany without unbalancing the German economy, in exchange for foodstuffs, fuels and minerals, and (b) 10% of such industrial capital equipment as could be taken from the western zones without unbalancing the German economy, for which no payment was to be made. Such removals from the western zones were to be completed within two and one-half years and exchange deliveries covered by 3(a), within five years.

(See also International Bank for Reconstruction and Development; International Court of Justice; International Monetary Fund; International Law; International Organizations; Pan-American Conferences, 1937–46; Peace Negotiations; Strategy of World War II; United Nations; United Nations Relief and Rehabilitation Administration; World War II.)

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International Court of Justice

The International Court of Justice, created by the United Nations, had as a heritage the experience and traditions of the Permanent Court of International Justice (q.v.), created by the League of Nations. The paragraphs that follow summarize the high points of its immediate historical background and initial session.

Dumbarton Oaks Proposals.—The Dumbarton Oaks Proposals of 1944 for the establishment of a general international organization envisaged a court as a part of the organization. They stated that there should be such a Court; that its statute should be (a) the statute of the Permanent Court of International Justice, continued in force with such modifications as might be desirable or (b) a new statute in the preparation of which the statute

of the Permanent Court of International Justice should be used as a basis.

Committee of Jurists.—In April 1945, a conference of jurists representing 44 United Nations was held in Washington, D.C., to prepare a draft statute to be considered at the then forthcoming San Francisco conference. The draft thus prepared followed in the main the statute of the Permanent Court of International Justice with modifications needed to harmonize it with the new international organization then in prospect. Certain improvements over the old statute were incorporated. Questions whether a new court should be created or the old one continued, whether the judges should be nominated directly by the governments and whether compulsory jurisdiction should be optional or mandatory, were left for consideration at San Francisco, being largely political in character.

The draft prepared by the committee of jurists formed the bases of discussion at San Francisco and with such changes as were there made became the statute of the new court, the International Court of Justice.

United Nations Charter.—By article 7 of the charter of the United Nations, the court was made one of the principal organs of the United Nations, and by article 92 it was denominated "the principal judicial organ" and the statute was made an annex to, and an integral part of the charter. All members of the United Nations ipso facto became parties to the statute.

The conditions under which other states might adhere to it were left to be determined in each case by the general assembly upon recommendation of the security council (article 93).

Court Statute.—The statute under which the court functions consists of seventy articles, covering such subjects as organization, competence, procedure, advisory opinions and amendments.

The 15 judges are elected by the general assembly and the security council, independently, from nominations submitted by the national groups in the Permanent Court of Arbitration (Hague Convention I, 1899 and 1907) or by national groups appointed for this purpose by states not represented in the court of arbitration (article 4). The term of office is nine years, but it was provided that of those chosen at the first election the terms of five should expire at the end of three years and those of five others at the end of six years (article 13). This makes it possible to have on the court at all times a majority of experienced judges.

The seat of the court is at The Hague, but it may function elsewhere if it considers it desirable (article 22).

Competence.—Only states may be parties to cases before the court (article 34). States not parties to the statute may have access to the court on conditions determined by the security council (article 35). No state may be sued without its consent unless it has accepted compulsory jurisdiction of the court under article 36 of the statute, and then only with respect to specified classes of cases. Such acceptances may be unconditional or on condition of reciprocity. As between parties to the statute, states which had accepted compulsory jurisdiction of the old court automatically accepted compulsory jurisdiction of the new court for the unexpired period of such acceptances (article 36, paragraph 5).

The court decides cases in accordance with international law. It applies international conventions, international custom (as evidence of a general practice accepted as law), the general principles of law recognized by civilized nations, and it may look to judicial decisions and the teachings of highly qualified publicists, as subsidiary means

for determining rules of law. It may decide cases ex aequo et bono, it the parties agree (article 38).

Procedure.-The official languages of the court are French and English (article 39). Parties to cases are represented by agents. They may have assistance of counsel or advocates before the court (article 42). The procedure consists of written pleadings and oral arguments. Witnesses and experts may be heard (article 43). Decisions are given by a majority of the judges present but judges not concurring may write separate opinions (articles 55-57).

Advisory Opinions, Amendments.—The Court may give advisory opinions on legal questions at the request of the general assembly or the security council. Other organs and specialized agencies of the United Nations may request such opinions on legal matters within the scope of their activities if authorized by the general assembly (articles 65-69, statute; article 96, charter).

The procedure of amending the charter applies to the statute (article 69). The court may propose amendments (article 70).

First Election.—The first election of judges took place on Feb. 6, 1946, at the London meeting of the General Assembly and the Security Council, and the court held its first session at The Hague, April 3-May 6, 1946.

(G. H. H.)

The 15 judges elected and their terms of office were as fol-

Name	Nation	Term of office (years
Dr. Hsu Mo	China	Three
Dr. C. de Visscher	Belgium	Six
Prof. J. Basdevant	France	Nine
Dr. J. G. Guerrero*	El Salvador	Nine
Sir Arnold McNair,		
К. С.	United Kingdom	Nine
Prof. S. G. Krylov	U.S.S.R.	Six
Sr. Fabela Alfaro	Mexico	Six
Green H. Hackworth	United States	Six
Dr. A. Alvarez	Chile	Nine
Dr. J. P. Azevedo	Brazil	Nine
Abdel Hamid Badawy		
Pasha	Egypt	Three
John M. Read	Canada	Three
Dr. M. Zorichitch	Yugoslavia	Three
Dr. Helge Klaestad	Norway	Six
M. Winiarski	Polanď	Three

^{*}Elected president at first meeting of court.

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International Information and Cultural Affairs, Office of

See EDUCATION.

International Labour Conference

See International Labour Organization.

International Labour Organization

The decade 1937-46 began with three prosperous years during which the 23rd (1937), 24th (1938) and 25th (1939) sessions of the International Labour conference were held in Geneva. More than 50 member states were represented in 1939 by 86 government, 34 employer and 84 worker delegates, who with their advisers and others made a total of 362 participants. Four lean years followed, with only one conference (the extraordinary session held in New York and Washington in 1941 at which 34

member states were represented). Finally there were three years of expansion, during which four conferences met: the 26th session in Philadelphia, April 20-May 12, 1944, 27th in Paris, Oct. 1945, 28th (Maritime) in Seattle, June 9-29, 1946, and the 29th, Montreal, Sept. 19-Oct. 9, 1946, with 159 delegates, 241 advisers and others making a total of 429 participants, representing 46 member states.

These years witnessed continuous growth, increased faith in the fundamental principles and soundness of the structure of I.L.O. and confidence in its unique pioneering experience and accumulated experience of years. It had demonstrated, as about the only international "going concern," the value of the tripartite system of representation, its concern for the common interests of everyday life and the administrative initiative and responsibility of its director. (Cf. Carter Goodrich, Annals, v. 246.)

The Conventions (Treaties) 1937-46.—Prepared by experts with meticulous care after consultation with governments and debated usually in two or more consecutive conferences, the conventions were adopted by two-thirds vote, as follows:

1937 (23rd Session, Geneva) No. 59, Minimum Age (Industry), Revised; No. 60, Minimum Age (Non-industrial Employment), Revised; No. 61, Reduction of the Hours of Work (textiles); No. 62, Safety Provisions (Building).

1938 (24th Session, Geneva) No. 63, Statistics of Wages and Hours of Work.

1939 (25th Session, Geneva) No. 64, Contracts of Employment (Indigenous Workers); No. 65, Penal Sanctions (Indigenous Workers); No. 66, Migration for Employment; No. 67, Hours of Work and Rest Periods (Road Transport).

1946 (28th Session, Maritime, Seattle, Wash.) No. 68, Food and Catering for Crews on Board Ship; No. 69, Certificaand Catering for Crews on Board Ship; No. 69, Certification of Ships' Cooks; No. 70, Medical Examination of Seafarers; No. 71, Vacation Holidays with Pay for Seafarers; No. 72, Crew Accommodation on Board Ship; No. 73, Social Security for Seafarers; No. 74, Certification of Able Seamen; No. 75, Seafarers' Pensions; No. 76, Wages, Hours of Work on Board Ship, and Manning. Yang Session, Montreal) No. 77, Medical Examination Young Persons (Industry); No. 78, Medical Examination Young Persons (Non-industrial occupations); No. 79, Night Work Young Persons (Non-ind. occupations); No. 80. Eind Articles Portion convention 80, Final Articles Revision convention.

Recommendations followed the same procedure as conventions and dealt with subjects not yet ripe for a convention, or for better enforcement and clarification of existing conventions. Seven were adopted in 1937, 10 in 1939, 7 in 1944, 1 in 1945, 4 at the 28th (maritime) session in 1946 and 2 at the 29th session in 1946—a total of 80 after 1919. The conventions adopted, 1919-46, numbered 80, of which 52 were in force in 1946. Two acts of historic importance that transcended all the conventions and recommendations were: (1) the Declaration of Philadelphia-1944, concerning the aims and purposes of the I.L.O., reaffirmed the original charter and expanded its interpretation and intent to include matters pertaining to the close relationship between labour and general economic policy; (2) two instruments for the amendment of the I.L.O. constitution: 1945, Paris, dealt with membership, finance and procedure for future amendments, later ratified.

Ratifications and Enforcement.-Of 922 ratifications of conventions, registered 1919-46, 19 occurred in 1945-46, and 37 during the war years, 1939-45. Enforcement depended on mutual supervision through annual reports required by the constitution of member states on the action taken on ratified conventions. Such reports in the years 1937-39 and 1945-46 were submitted to a committee of experts for examination and report to the next conference, where they were again examined by the Con-

ference Committee on Application of Conventions, and fully debated in the conference itself. Of 725 reports requested for the 29th session in 1946, 523 were received which under existing world conditions demonstrated satisfactory efforts of member states to fulfil their obligations.

Special Conferences and Committees.—First in order of importance were the 2nd and 3rd Regional Conferences of American States (I.L.O. members) in Havana, Cuba, 1939, and Mexico City, 1946, which reaffirmed American solidarity and the value of I.L.O. principles as a defense of freedom and democracy. The First Inter-American Social Security conference was held at Santiago, Chile, in 1942, and the Permanent committee, organized in 1940 under joint auspices of Peru and the I.L.O., met in Mexico City in 1945 and the executive committee in Geneva in 1946 to arrange for the 2nd I.A.S.S. conference. The Joint Maritime commission held two meetings in London in 1942 and 1945; the Maritime Technical Preparatory conference met in Copenhagen in Nov. 1945, and preparations were completed for the very successful 28th (Maritime) Session of the General Conference. International tripartite industrial committees were a new departure in I.L.O. technique, authorized by the Philadelphia conference, 1944. The Coal Mines, and Inland Transport committees held their first meetings in London in Dec. 1945, Iron and Steel in Cleveland and Metal Trades in Toledo, O., in April and May 1946.1

Other I.L.O. Services.-High staff officials attended numerous meetings on invitation of other international organizations, and thus made substantial contributions from I.L.O. experience to solution of other international problems. Meetings like those on urgent food problems of the Food and Agriculture organization (U.N.), in Washington, D.C., May 1946, on economic reconstruction of devastated areas, and the Preparatory commission of U.N.E.S.C.O., both in London in July 1946, increased the burdens and opportunities of I.L.O. Missions of high officials to many countries were made for first-hand information and renewal of contacts, such as the re-establishment of correspondents in Prague and Warsaw, and the reopening of the Rome branch in 1946.2

Publications.—Of chief importance were: International Labour Code, 1919-39, 920 pp. (Montreal, 1941); Constitutional Provisions Concerning Social and Economic Policy, 755 pp. (1944); Inter-American Handbook of Social Insurance Institutions, 1945, 187 pp.; the Director's Reports; Proceedings of the Conferences; Conference Documents;3 International Labour Review (monthly), and Legislative Series (quarterly).4

A few of the more important committee meetings held in 1945 and 1946 were: the Correspondence Committee on Accident Prevention, to draft a Model Code of safety regulations for factories, Montreal, Nov. 1945; International Development Works, Montreal, Jan. 1946; Employment, May, Women's Work, July, Permanent Migration, August, all in Montreal; and Experts on the application of conventions (16th Session), Montreal, July 1946. Proceedings and action taken by most committees reported fully in subsequent issues of *International Labour Renew*.

I.L.O. and the United Nations.-The I.L.O. conference in Geneva in 1939 declared it would maintain its activities to the greatest possible extent in the event of war. Director John G. Winant found this impossible in Geneva in 1940 and established temporary headquarters in Canada under an emergency committee authorized to act for the governing body when it could not meet. In Montreal, less than 50 staff members (about 10% of prewar staff) began operations. A few remained in Geneva to guard the home plant, the books and archives that could not be taken along; others went to London, Washington and India to strengthen local branches; some were sent on special missions, others were pensioned, resigned or dismissed. The extraordinary conference (New York-Washington, 1941) voted unanimously to support and continue the experiment, and pledged its loyalty to the allied cause as the only hope of a world in which I.L.O. principles and social objectives could be realized. The declaration of Philadelphia, adopted unanimously at the 26th session of the conference (1944) and added to the constitution by amendment in 1946, reaffirmed the "principles" and included economic functions necessary for the achievement of the "social objective." A new I.L.O. was born in Philadelphia, pledged to co-operate with the United Nations and all international agencies to make its experience and resources available for reconstruction and world peace.

The Paris conference in 1945 (27th session) adopted an instrument of amendment, duly ratified in 1946, which amended the constitution with respect to membership, finances and adoption of future amendments. It severed its connection with the League of Nations, and set up a delegation on constitutional questions to report further amendments necessary for complete co-operation with the United Nations and the Social and Economic council. In May 1946, a draft agreement was negotiated between the U.N. and I.L.O. which made I.L.O. a "specialized agency" of the U.N. for appropriate action in its special field, and established a working partnership of autonomous equals for their mutual advantage. It was ratified by all parties in interest.⁵ (See also Child Welfare; League of Nations; WORLD FEDERATION OF TRADE UNIONS.) (S. McC. L.)

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International Law

It is difficult for the human mind to contemplate the fundamental changes that took place in the ten years 1937-46. From the period when both municipal law and international law were at least designed to save human values, the world had come to the period of the atomic bomb and the United Nations with veto powers which practically excluded the rule of law in time of war. From a policy of nonintervention as dictated by international law, the nations had come to the mores of universal inter-

tion of conventions (10th Session), 1200 taken by most committees reported fully in subsequent issues of International Labour Review.

2 Often missions were sent at request of governments for help in adjusting national legislation and administration in order to ratify conventions or fulfil obligations already incurred. The Chinese government requested, in 1946, technical assistance in connection with employment problems, labour inspection and social insurance. Written inquiries, not requiring missions, were numerous and exacting in research, collection and classification of material in LLO. files, and sometimes they entailed correspondence with other member-states. A few in 1946 were those of Egypt for a pension scheme for industry; India for a social insurance scheme for Indian seafarers; Iran for a draft safety code; Nicaragua for criticism of a draft labour code; Norway for holidays-with-pay regulations; Sweden for information on work in compressed air.

3 Thirty-five Conference Documents, most in 3 languages, aggregating 10,000 words, were published in 12 months in 1945-46. Many contained valuable technical information on major world problems, some of considerable historical value.

4 Other serials extensively relied upon for factual material not otherwise accessible were: Industral Safety Survey, quarterly; Year Book of Labour Statistics, annual, and the Official Bullatin, at irregular intervals. All the serials were maintained throughout the decade under review (1937-46).

⁵ The director of the International Labour Office, Edward J. Phelan, was appointed director Sept. 16, 1946, effective retroactively from Feb. 1941, when he was made acting director to succeed John G. Winant, resigned. The salary of the director was 80,000 Swiss francs per annum with an annual entertainment allowance of 20,000 Swiss francs, a total of approximately \$25,000. The new fourth director deserved the high honour conferred upon him as the successor of Albert Thomas, Harold Butler and John G. Winant. Phelan was one of the "founding fathers" in Paris in 1919, was appointed to high office in the I.L.O. by the first director, and had been in its service continuously through its 27 years. With remarkable skill, courage and statesmanship he piloted the organization through six troublesome years, 1941–1946, and brought it back to near prewar strength.

vention in the ostensible interest of keeping the peace, but with results which could hardly eventuate in peace. From a relatively legal regime, nations had come down to a period of confusion that made the life of small states exceedingly precarious. From a system of co-ordination, which assumed the legal equality of states, on which international law was founded, an effort had been made to produce a system of subordination, analogous to municipal law, by which the major states would assume responsibility by force to maintain peace among the smaller states. This was capped by the atomic bomb which, unless controlled as no other lethal weapon had ever been controlled, bore the potentialities of world-wide destruction. No such dilemma had ever faced civilized man.

One might attribute this degradation to numerous causes, but critics believed not least among them was the change in U.S. policy from abstention from European and Asiatic wars to a policy of allegedly utilitarian intervention in the interest of righteousness. Some critics maintained that the United States at the end of World War II was so deeply bogged in Europe and in Asia that the future of the country was doubtful.

The new U.S. foreign policy was supposed to be in execution of newly-discovered "responsibilities" of the United States by sanctions and war to keep the world peaceful and bring about changes by "orderly processes."

The new method of running the world by organizing the so-called peace-loving nations against the "aggressor"—meaning any disfavoured country—was totally inconsistent with the law and with the development of history. It was glib and facile to announce the propaganda that this was "one world." Like many half-truths this was likely to be believed by some, especially in the face of the atomic bomb.

But climates differ in various parts of the globe, peoples differ and nationalism showed no sign of surrender. So long as such conditions prevailed, examination was likely to disclose, if not many worlds, many nations.

Neutrality vs. Intervention.—Although in the period between 1928 and 1935 there had been a strong movement in the United States to grant the president discretion in place of law, it was not until the "quarantine" speech of Oct. 1937, that President Franklin D. Roosevelt really disclosed his ambitions to discriminate between belligerents, to join in foreign wars, to "quarantine" the "aggressor" and to exert sanctions to accomplish that end. He believed that it was possible, without upsetting the world, to make an expanding country subservient to the wishes of the self-satisfied.

The year 1937 was also important because it witnessed a revision of the U.S. Neutrality act of 1935; it witnessed the passing of the Act of Jan. 8, 1937, in which the restrictions of that Neutrality act were applied to the Spanish Civil War; and it witnessed the attack of Japan on China at Peiping, which led to U.S. intervention in the war against Japan.

In the matter of U.S. neutrality, Senator Gerald Nye and his friends, desiring to avoid some of the temptations which led to U.S. involvement in World War I, had succeeded in obtaining the enactment of a strong statute known as the Neutrality act, which went beyond the obligations of the United States under international law. Among other matters it prohibited the export of arms, ammunition and implements of war, prohibited loans to belligerents, prohibited American vessels from entering war zones, prohibited the arming of merchant vessels and required that any commodities other than arms, ammunition and implements of war be carried away in foreign ships

after title had passed to a foreign national prior to leaving a U.S. port. There was some evidence that President Roosevelt signed this bill with great reluctance, for he had wanted from the beginning a presidential discretion in distinguishing between what he called the good and evil belligerents in the interests of righteousness. He was irked by the injunction of maintaining an impartial position between two foreign belligerents, but yielded to the pressure of public opinion and extolled the virtues of U.S. neutrality and abstention from foreign wars.

In the face of this record it was a feat of no mean proportions to confuse the public in 1939 into a belief that an arms embargo was immoral and that the lifting of the arms embargo with the shipment of arms, practically to one side only, was a virtue. Even greater was the change permitting U.S. ships to enter war zones and lifting the restrictions on arming merchant ships. While loans to belligerents were still prohibited, the lending powers of the Export-Import bank were increased so that government loans replaced private loans. At the same time irritating embargoes were placed upon Japan, and the commercial treaty with that country was abrogated. These were all justified as "measures short of war," designed to keep the United States out of war. At the same time Secretary Cordell Hull made continuous attacks on isolation as a method of getting the country into war and praising intervention as a method of keeping it out.

The result was foreshadowed. While paying lip service to the demands of the U.S. people to keep out of war, in speeches throughout the period ending with the campaign of 1940, the acts that were actually undertaken were calculated to drive the country into war. This became especially pronounced after the fall of France in June 1940, which deeply shocked the president. It is hard to read the negotiations with Japan of 1941 without realizing that peace was not in prospect.

The last vestiges of the Neutrality act disappeared on Dec. 7, 1941, when Japan attacked Pearl Harbor and initiated the war. Shortly thereafter Germany and Italy declared war upon the United States.

Spanish Civil War.—On Jan. 9, 1937, the U.S. congress placed an arms embargo on both parties to the Spanish Civil War which began in 1936. The United States followed in the footsteps of the League of Nations and the Nonintervention committee in London and thereby actually helped to defeat the loyalists. Francisco Franco was not then a recognized belligerent, and the United States was under a legal duty to trade only with the Spanish loyalists. Yet the executive refused to admit the existence of a war in Spain, an admission which would have entailed recognition of both parties to the war as belligerents and hence entitled to exercise belligerent rights on land and at sea. By the embargo, nevertheless, the administration implicitly admitted that there were two parties to the war, and that the rules of neutrality and nonintervention required that both parties be treated impartially. This was an anomalous position, and when in 1938 the United States tried to withdraw, it was found that a vested interest in that position had grown and the Franco regime had acquired greater strength, so as to entitle it to recognition as a belligerent. The loyalists being deprived of the arms to which they had a right, the result was that Franco, with the aid of Benito Mussolini and Adolf Hitler, succeeded in defeating the loyalists, who had slight aid from Russia. Some people regarded the Spanish Civil War as a testing ground for the subsequent world war. Franco was ulti-

mately recognized by the Nonintervention committee and by the United States.

A curious situation developed with respect to the requisition abroad of Spanish vessels. Before the end, two governments were actually recognized by foreign courts as functioning in Spain. If the vessel came from territory controlled by Franco, he alone was sustained in requisitioning it. If the vessel came from territory controlled by the loyalists, only the loyalist government could function. This gave rise to serious criticism. (See also Spanish Civil War.)

Chinese-Japanese War.—The background of the Chinese-Japanese War was wrapped in confusion. Japan had acquired the status of a great power only in recent years. The disorganization of China and the incessant wars in that country had led to a state of anarchy which invited intervention. Had China been a strong nation the intervention would hardly have occurred. President Roosevelt never "found" that the Chinese-Japanese conflict was "war" because he would have had to invoke the Neutrality act and would have been unable to help the Chinese government as he actually did. Japan also had its reasons for not declaring war, although as the British court recognized, war actually existed.

Later in the year, in his "quarantine" speech, President Roosevelt charged that Japan was a treaty-breaker, having violated the League covenant, to which the United States was not a party, the Kellogg-Briand pact, which contained stultifying reservations, and the Nine Power treaty, which was a political document incapable of legal exegesis. From that moment, however, he determined that Japan was an "aggressor," and that it was the United States' duty to stop Japan. The conversations of 1941 between Japan and the United States showed clearly the diametrically opposed views of policy and came to an impasse on Nov. 26, 1941, when Secretary Hull handed Japan certain conditions which he knew Japan could not or would not accept. Japan had overrun a large part of China and apparently was unprepared to withdraw at U.S. command. It risked war rather than fulfil the United States' requirements.

Aid to the Allies.-During 1940 and 1941 the administration performed numerous acts not permitted to a neutral nation under the law of neutrality. It cannot be said, however, that the people of the United States were unwilling to help England in this way. The United States permitted bombing planes to be supplied to Great Britain and France. To avoid conflict with U.S. statutes, they were flown from California to the Canadian border by U.S. pilots, title there transferred, and the flight then continued across Canada to England. England built many powder and munition plants in the United States. Cotton and rubber were supplied to England by virtue of an agreement made June 23, 1939. England freely examined the mails that went from the United States to Germany, under an admission made in May 1916. The claim that belligerent acts could not be committed in an immunity zone 300 to 600 mi. around the American continent, promulgated at Panama in 1939, was disregarded by the belligerents without protest. Damaged British ships were repaired in U.S. shipyards. The destroyer deal of Sept. 1940, transferred 50 over-age destroyers to Great Britain. Under the Lend-Lease act of March 11, 1941, some \$49,000,000,-000 of lend-lease (q.v.) materials were supplied to the belligerents and other countries whose defense was deemed by the President important to the defense of the United States, thus enabling the President to choose United States allies and United States enemies at discretion. The naval bases were insured by U.S. possession against enemy attack German submarines were hunted down by U.S. destroyers within the 300 or 600 mi. zone, regardless of the fact that no belligerent accepted this excessive claim. The "Reuben James," a U.S. destroyer, was actually sunk in this enterprise. The numerous provocative acts against Japan, such as the declaration of a moral embargo, followed by a legal embargo and the abrogation of the commercial treaty with Japan, were within U.S. legal rights. They doubtless created the expected resentment.

Black Lists and Prize Law.—After the attack on Pearl Harbor the United States officially entered the war and helped to determine its outcome. After Germany overran numerous other countries in Europe the funds of nationals of those countries in the United States were frozen and black lists of neutral traders based upon their supposed sympathy with the nazi cause were published from time to time. The black lists were designed to prevent U.S. citizens from trading with persons on the list and helped largely to bring about their ruin or damage. The list was not immediately abrogated after the war, so that it became also a post-war measure for restricting trade, punitive in purpose and character.

Prize law was largely set aside in the United States; no important prize case had occurred since the Spanish American War about 50 years before. There were some English cases on prize law. Judge Boyd Merriman applied the rules decreed by the Prize Act of 1939, and the precedents of World War I.

Potsdam Declaration.—In the Potsdam declaration of Aug. 1945, the obligations of law seem to have vanished. Under the guise of reparations the distinction between private property and public property was wiped out, territory was amputated without regard to the will of the inhabitants, mass migrations were commanded, the Geneva Convention on Prisoners of War was disregarded by the resuscitation of the institution of "slave labour" and the vanquished powers were more or less eradicated from participation in world trade. President Harry S. Truman admitted that chaos had been created in Germany, but this he attributed to the nazi regime.

A few further words should be said about the Potsdam declaration, since this was the basis on which some of the peace treaties were to be drawn. The declaration seemed to regard law as one of the forgotten virtues. It was hard to say which violation embodied the most future danger, but it was certain that the confiscation of private property which it directed if it did not command, had in it the seeds of great damage to the western system. If private property was to be confiscated on a large scale, the end of that institution might be foreshadowed. Trade would be greatly impaired and foreign investment rare. The capitalistic system was founded on the sanctity of private property; to destroy that foundation was to impair the institution built upon it.

(See also International Conferences, Allied [World War II.])

Treaties and Executive Agreements.—The Litvinov assignment of Russian assets to President Roosevelt for the United States in 1933 gave rise to several cases of great importance. In 1936 Justice George Sutherland, in the case of United States v. Curtiss-Wright Export Corp. (a criminal prosecution for violating the presidential embargo on the shipment of arms to Paraguay and Bolivia in the Chaco War), uttered a dictum declaring a wide power over foreign affairs possessed by the federal government, given to it as direct successors to the crown outside the constitu-

tion, though the agents of the government seemed to be bound by the constitution. This was followed in 1937 by the case of United States v. Belmont, coming up on a motion to dismiss the claim of the United States, as successor to the soviets, to private assets held in a U.S. bank for Russian creditors. There also Justice Sutherland pronounced a dictum to the effect that the soviets had successfully confiscated debts due by U.S. citizens to Russian creditors. This dictum was used in the later case of United States v. Pink, officially to support the thesis that the United States had obtained title to the surplus held by the New York superintendent of insurance after the liquidation of the first Russian Insurance company, and that the United States title took priority over the claims of Russian stockholders and creditors. This decision not only purported to justify extraterritorial confiscations but had the curious effect of confiscating only a certain type of Russian property, debts due by U.S. citizens to Russian nationals; gave the imprimatur of validity to Russian confiscations of property in the United States, whereas the state department was contending that Russian confiscations in Russia were invalid; in effect traded about \$5,000,000 of this type of asset for claims against Russia of approximately \$300,-000,000, which doubtless never would be paid; permitted the President alone by executive agreement to change title to U.S. property, and threw the legal profession into consternation. Chief Justice Harlan Stone and Justice Owen Roberts dissented violently from the majority decision, which purported to legalize the Roosevelt-Litvinov executive agreement, and since it was incidental to recognition, was deemed to prevail over New York policy and law. The New York courts gave the decision a strict interpretation and applied it only to confiscations of which the United States became the beneficiary.

These decisions were employed to great advantage in the unremitting campaign to deprive the senate of its two-thirds vote on treaties. This campaign encountered numerous vicissitudes. Following are the statistics which indicated the submergence of the treaty and the prevalence of the executive agreement, which might or might not be submitted to congress for its consideration:

Year of Official Printing	Treaties	E \ccutive A greements
1930	25	11
1931	13	14
1932	11	16
1933	9	11
1934	14	16
1935	25 8	10 ′
1936	8	16
1937	15	10
1938	12"	24
1939	10	26
1940	12	20
1941	15 6	39
1942	6	52
1943	4	71
1944	1	74
1945	5	56

The campaign began with the publication of Wallace McClure's book on executive agreements. He therein undertook to contend that anything that could be accomplished by treaty could be accomplished by executive agreement, without congress if possible, with congress if necessary. During the war the United Nations Relief and Rehabilitation administration, the Bretton Woods Agreements act, the Food and Agriculture organization and numerous other statutes had been passed, which indicated a practical waiver by the senate of its insistence upon a treaty. When the substance of the tentative executive agreement was included in the bill or joint resolution to

be passed, and was not signed as a final agreement until congress acted, it might be deemed to have been "authorized" by congress. The campaign reached its climax in the matter of the St. Lawrence Waterway and Power project, a resolution designed to endorse an executive agreement of 1941, in the hearings on which it was officially contended that when an agreement dealt with a subject matter within the power of congress, the executive might turn a prior treaty into an executive agreement, send the agreement to congress for its "information" and there solicit the approval of a majority of house and senate. This procedure was endorsed by those senators favouring the St. Lawrence project. It would serve to give the president an option whether to submit his treaty to the senate, which he would do when assured of a vast majority, or to label his treaty an executive agreement and submit it only to a bare majority, like a statute. In May 1945, a proposed constitutional amendment was debated and passed by the house in a form permitting the participation of the house in treatymaking but requiring 218 in the house and 49 in the senate as a condition of the approval of treaties. The proposed amendment rested in the senate judiciary committee with 2,000 other proposed amendments. But if the state department succeeded in its contentions it would have accomplished an amendment of the constitution without going through the difficulties of the amending process.

Expropriations.-Bolivia in March 1987, and Mexico in March 1938, on different excuses, expropriated U.S. oil properties, and Mexico agricultural properties as well. For the latter, Mexico first gave bonds, then mere receipts, then nothing. In response to the United States protest, Mexico answered that United States citizens were treated no differently from Mexicans and that by article nine of the Montevideo convention foreigners and nationals were to be treated the same way. Secretary Hull denied the validity of this contention, contending that he had made a reservation of international law and that that law did not imply an equality of mistreatment. After a commission had been appointed to evaluate the agricultural properties, Mexico agreed to make payment over a number of years, but reserved the validity of her contentions. The Mexican oil expropriation, while first met by an insistent United States claim for compensation of the value taken, was countered by Mexico by a peculiar Mexican law of valuing the surface properties only. The approach of the European war enabled the issue to be settled by the appointment of an evaluating commission of two, one appointed by each country. This was in 1942, under an agreement of 1941. Although the companies were promised by Secretary Hull that the subsoil petroleum would be taken into account by the appraisers, the final figure of some \$23,000,000 was a blind figure and outsiders did not know how it was arrived at. Possibly the subsoil petroleum was not taken into account. If this were true, the oil companies made a great sacrifice in the national interest. Their claim amounted to more than \$100,000,000. The claim of the British remained unsettled, although broken diplomatic relations were later renewed.

(See also Petroleum.)

United Nations.—Near the close of World War II, the United States took the lead in establishing an organization of the nations which was to safeguard peace. The draft of a charter was made at Dumbarton Oaks (1944), and a revised draft at San Francisco (1945). The theory was that the United Nations, controlling the world, would find out wherever a threat to peace existed and by force if necessary

eliminate the threat, thus preserving the peace. They were to down "aggressors" by united action and apply sanctions to the guilty. The large powers (five) were to be the matrix of a security council and had to agree unanimously. But seven votes out of eleven would determine action by the security council, which was to remain in constant session. The assembly was to consist of representatives of all the United Nations and was to meet annually and to make recommendations on questions with which the security council did not deal. Each of the five great powers in the security council could frustrate action by the United Nations by interposing a veto.

This system was announced to the world as one designed to assure peace. The theory was indulged that the reason for the failure of the League of Nations was due to a lack of force and the absence of the United States. The League was abolished because in 1939 it had expelled the U.S.S.R., now by the turn of events one of the most important powers in the world. It was assumed that the five great powers would always see eye to eye.

The United Nations could not overcome its first hurdle because Russia seemed unable to agree with any of the other powers. An association of some nations and not others foreshadowed its doom. The five powers arrogated to themselves the management of the world so that all the other powers were actually small nations. The large powers, who alone endangered peace, could not be controlled. The United Nations were assumed to be peace-loving nations, the certificate of admission to the conference being a declaration of war against the axis. Critics might conclude that the U.N., in its first sessions, had barely avoided causing war between Russia and Britain in Iran, and seemed in danger of instigating a war with Franco Spain. The contribution to peace was not apparent. Russia even declined to answer a request for information by the U.N. Every part of the theory seemed unsound and had heretofore failed. Collective security seemed a myth. What a partial coalition amounted to was an agreement to maintain the status quo. Never had such an agreement lasted

Sanctions and the threat of military force which some apparently believed to be peaceful "measures short of war," were a powerful incentive to self-sufficiency and nationalism, evident in every section of the proposed charter. The adamant veto of the great powers was the expression not only of fundamental nationalism but also a mark of the impotence of the new organization. It would not have been possible to create a strong organization and obtain for it the support of 50 powers. The fact that general support was obtained implied an assumed innocuousness in accomplishing results, though as will be seen, the only sacrifice was to be made by the United States. In spite of the avowal of "sovereign equality" of all states, the organization contemplated a division between five great powers who were to govern the world, and a great body of smaller powers whose destiny the former would determine, if they could achieve unanimity. This represented a precarious independence of small states, who were returned to a colonial status, since they had to seek a strong protector to prevent denunciation as an "aggressor" and to preserve their own existence. A student might well inquire what incentive the smaller nations had for signing such a suicidal compact, since they were required to offer their territory and troops to enforce the will of the great powers.

It was also announced that the organization would strengthen international law. But in its first months, member nations had only weakened it until its status was precarious. The introduction of sanctions-a Geneva invention-pursuant to the secret agreements of 1916 at London, insured the inequality of states and the subordination of the weak to the strong, and thus was a serious impairment of international law. The charter began by compelling all member nations to participate in joint action against an "aggressor" to the extent that they were committed and called upon by the security council. It thus abolished the privilege of neutrality, one of the great achievements of four centuries of history, designed to limit belligerency within narrow confines so as to enable some countries to stay out of war with a legal status and to permit peace to be restored without impossible difficulty. All this was now changed. All wars were now to become general and theoretically universal. Hence the continued talk of avoiding a "third world war"; no smaller war could be conceived. The phrase that "peace is indivisible" was belied by all history and was calculated to make war universal. International law could not be promoted by lip-service, but only by

"Justice" was mentioned three times as one of the objectives of the charter, and the assembly could recommend "measures for the peaceful adjustment of any situation regardless of origin which it deems likely to impair the general welfare . . ." What this power to recommend peaceful change would amount to remained unknown. Certainly it would not strike as a happy solution the nation that was asked to abandon territory or rights enjoyed. The unworkability of article 19 of the League of Nations covenant was well remembered. The introduction of the criterion of "justice," proper as it doubtless was, was liable to have unforeseen and unpleasant results, because "justice" is differently understood in national and international parlance. Justice internationally is looked upon differently by the victor and by the vanquished. If the victors were asked by recommendation of the members of the assembly to give up some of their gains which rested on no other right than force, were they not likely to resent the suggestion and to entrench themselves in their gain? A great power by its veto could possibly prevent the security council from voting on a situation which constituted a threat to the peace, if it or its satellite were required to make sacrifices. But resentments would nevertheless be created among the affected countries. If these situations occurred in eastern Europe or Asia, let us assume, why should the United States become involved? Abstractions could thus lead to serious trouble. The defeated powers could also jeopardize any definitive settlement by invoking at every opportunity the injustice they allegedly or actually will suffer.

Non-intervention had been a fundamental principle of U.S. policy. It had been reiterated in many inter-American conference resolutions, and some seemed to believe that intervention in the domestic affairs of a state was excluded by the charter. In 1943 assistant secretary of state Adolf Berle had remarked:

Nor have we any intention to scrap the well-settled policy of non-intervention in the affairs of other states. The policy of non-intervention in other peoples' affairs is and must be the first principle of sound doctrine. Unless this is the settled practice of nations, there can be no principle of sovereign equality among peace-loving states and probably no permanent peace at all.

And yet it must be admitted that intervention had become a powerful factor in U.S. life. The new ideology required intervention in the domestic affairs of foreign governments in order to insure a government's conformity to United States views of national and international policy. How else could the intervention in Argentina be justified? Writers asserted that United States intervention against so-called "aggression" required intervention against particular foreign governments and, it was suggested, should so require. This was the old Wilsonian Latin-American policy of 1913 which, universalized, led into the morass consequent upon two world wars. Who could say that the world had seen the last of war? Intervention had become a national policy confirmed by Dumbarton Oaks and San Francisco.

Only an "aggressor" was to be punished by the Security council. But what made a nation an "aggressor" was quite unknown. The term was undefined and undefinable, in spite of the attempts of Russia and others during the 1930s to give it definition. Again, it might be assumed by the uninformed that the decision of seven of the 11 members of the Security council, including the five permanent members, would be reached on objective considerations regardless of self-interest. Precisely the opposite was the record of experience. Decisions as to who was an "aggressor" were reached on the basis of alliances, prior commitments, political relations and self-interest-generally before real evidence became available. Possibly this method of arriving at a decision foreclosed unanimity of the Big Five. Unanimity had to be achieved, moreover, not merely as to the identity of the "aggressor" but as to the measures to be employed against him. These might be such as to terminate the existence of a state, so that smaller states had inferentially committed themselves to renounce their independence, whether they joined a great power or not. Moreover, it was not certain that revolutions might not be considered acts of aggression. If so, the American Revolution, and most similar revolutions, could have been stopped by the proposed organization. (See also United Nations.)

War Criminals. - Unprecedented trials proceeded at Nuernberg and Tokyo in which the victors established tribunals to try the leaders of the vanguished for war crimes, the crime of starting an aggressive war and committing crimes against humanity. Although the trial of the leaders of the defeated by the victor himself did not promote confidence in the judicial process, it was a fact that proven war crimes could be punished. But it was more doubtful whether there was such a thing as beginning aggressive war, and whether aggressive war could be pronounced a crime. The difficulty of juggling the word "aggressor" alone was a deterrent, for one should examine the historical reasons for conflict. Whether crimes against humanity could be imputed to the persons on trial was an open question. If they could be proved, punishment would elicit approval. (See also WAR CRIMES.)

Inter-American Policy.-Reference has been made to the Panama declaration, 1939, of a neutral zone of wide extent around the American continents with the exception of Canada. A meeting of the foreign ministers called at Havana in July 1940, following the occupation of France by Germany, led to a declaration that any attempt of a non-American state upon the integrity or inviolability of the territory of an American state would be considered an act of aggression against all of them. In Jan., 1942, a third meeting was called at Rio de Janeiro for the defense of the hemisphere and the elimination from the American continent of all axis diplomatic, political and economic influence. All except Argentina and Chile immediately broke off diplomatic relations with the axis. Chile followed Jan. 20, 1943. In 1945 the Chapultepec conference led to further agreements for inter-continental solidarity. All except Argentina participated in the conference. The conference stipulated the conditions on which Argentina might adhere, fundamental being the elimination of centres of axis influence. On March 27, 1945, Argentina declared war against the axis, and was thereupon invited to the United Nations conference, April 30, 1945, at San Francisco. (See also Pan-American Conferences, 1937–46.)

Atomic Bomb.—The discovery of the atomic bomb was subsidized by the U.S. administration and used during World War II in Hiroshima and Nagasaki. Subsequently its manufacture proceeded in the United States. Its domestic regulation was provided for in the bill introduced by Senator Brien McMahon, and passed by senate and house with amendments Aug. 1, 1946. Its international application was to be governed by a United States proposal advanced in the U.N. by Bernard Baruch. The essence of this proposal was that in return for divulging the secret of the manufacture and a promise to destroy the U.S. stock of bombs, foreign nations should in good faith, without veto, freely permit an inspection of all works calculated to produce the bomb, beginning with the raw material of uranium and thorium and ending with the manufacture itself. If foreign nations did not make the surrender of sovereignty implied in this freedom of inspection, the plan would fail and the United States presumably could continue manufacturing the bomb and not divulge the secret. The plan was applauded by a large part of the world as sensible and sound, and it remained to be seen whether the countries of the world would make sufficient sacrifice to permit the necessary inspection and supervision. Russia proposed a looser plan. (See also Atomic Bomb.)

World Government.—Realizing the deficiencies of U.N., a movement was under way in the United States during 1945 and 1946 to bring about world government. Since the states were unable to organize Europe in a unified fashion it seemed optimistic to suppose that they could organize the world in the form of a government. They had already dispensed with law as a binding cement, and ex-Justice Roberts in 1945 had announced that the law between nations was the law of "tooth and claw." The distrust among nations was great, and it seemed hardly possible that, however urgent the need, they would be in a position to establish a world government. While in view of the atomic bomb there was undoubtedly a need for such world government, it remained an open question whether the nations had fortitude enough to make the surrenders of national sovereignty which such government implied. (See also International Court of Justice; Law; Per-MANENT COURT OF INTERNATIONAL JUSTICE; PRISONERS OF WAR: WORLD POLITICAL ALIGNMENTS, POSTWAR.) (E. BD.)

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700 International Monetary Fund

Proposals for far-reaching co-operation in the international monetary sphere through the establishment of the International Monetary fund and the International Bank for Reconstruction and Development (q.v.) were agreed on at the International Monetary and Financial conference held at Bretton Woods, N.H., in July 1944. The fund and bank came into existence in Dec. 1945, when the proposals had been accepted by the required number of the governments represented at Bretton Woods. Both institutions aimed to promote the balanced growth of world trade and the maintenance of high levels of employment. Each institution, however, had its own special function: The bank to encourage the international flow of long-term capital to meet reconstruction and development needs; and the fund to help establish and maintain orderly currency practices.

The fund was established to promote orderly currency practices in two principal ways. After establishing a suitable pattern of initial exchange rates between member currencies, the fund would ensure reasonable stability in rates while providing for orderly changes when necessary. It would also eliminate harmful restrictions on current international payments and discriminatory currency arrangements. In order to help members maintain stable and unrestricted exchange relationships, the fund had resources of gold and currencies which it could make available to them to meet deficits in their current international payments

The fund's responsibilities with respect to exchange rates were of primary importance. At the outset each member had to agree with the fund on the initial par value of its currency in terms of gold. The fund was to aim at the establishment of a pattern of postwar exchange rates consistent with balance in the international transactions of members in order to facilitate the return to normal trade and the maintenance of stable exchange rates. After a member had agreed with the fund on the par value of its currency it was obligated to maintain the agreed par value and to propose a change only when necessary to correct a fundamental disequilibrium. Changes totalling 10% might be made after consultation with the fund; any further change could be made only with the approval of the fund. The fund would approve any change necessary to correct a fundamental disequilibrium. Reasonable stability of exchange rates would promote trade and productive investment by reducing exchange risks. Orderly changes in rates when necessary, however, would help to maintain a higher level of world trade and employment by enabling members to avoid harmful deflationary pressures and restrictions on current payments.

The fund's responsibilities with respect to exchange restrictions were also important. The fund aimed to eliminate restrictions on payments for current international transactions which were a serious obstacle to the revival and expansion of trade. No member could impose restrictions on current payments or engage in any discriminatory currency arrangements without the approval of the fund. During the postwar transition period members could maintain and adapt existing restrictions, but they were obligated to eliminate such restrictions as soon as possible.

The fund was to have resources of approximately \$8,000,000,000, contributed by member countries. When the fund had reached agreement with the majority of member countries on the initial par values of their currencies and

was ready to begin exchange operations, each member would be required to contribute an amount equal to its assigned quota, partly in gold and partly in its own currency. Each member was required to pay in gold 25% of its quota or 10% of its net official holdings of gold and United States dollars, whichever was the smaller. The resources of the fund were to be used to help members meet deficits in their international payments.

A member could purchase foreign currencies from the fund in exchange for its own currency until the fund's holdings of its currency equalled 200% of its quota, provided the increase in the fund's holdings of its currency did not exceed 25% of its quota in any 12-month period. These quantitative limits could be exceeded with special permission. There were also qualitative limitations on the use of the fund by member countries. A member was expected to use the fund to meet temporary deficits in its current international payments and had to take positive measures to correct its international position should its deficit prove to be more than temporary. A member was also expected to repurchase its currency from the fund within a reasonable period of time and was required to do so under certain conditions. The fund had to maintain a balance in its holdings of member currencies in order to be in a position to furnish the currencies needed by members. If the fund's holdings of any currency were tending to be exhausted, the fund would take measures to correct the situation. These measures included recommendations to member countries designed to restore balance in their international transactions. If necessary, the fund could declare a currency scarce and limit purchases by member countries. In such circumstances members were permitted to restrict payments in the scarce currency under certain conditions.

Ultimate control of the fund was vested in a board of governors composed of one governor appointed by each member. The board was required to meet at least once a year. A body of 12 executive directors was made responsible for the current operations of the fund. Five of the directors were appointed by the five members having the largest quotas, two elected by the Latin American republics and the remaining five elected by all the other members. The chief of the operating staff of the fund was the managing director, selected by the executive directors. Each member had 250 votes plus one vote for each \$100,-000 of its subscription to the fund. In voting by the board of governors, the governor appointed by each member cast the number of votes allotted to that member. Each executive director cast the number of votes either of the member appointing him or of the members whose votes counted toward his election.

The board of governors of the fund held its first meeting at Wilmington Island near Savannah, Ga., in March 1946 and its second meeting in Washington in Sept. 1946. The first election of executive directors was held at the March meeting and it was agreed to locate the main office of the fund in Washington.

The first annual meeting of the board of governors, held in Washington, D.C., at the end of September and early Oct. 1946, was marked by an atmosphere of amicability and co-operation. In a few days, decisions were taken to admit Italy, Turkey, Syria and Lebanon into the fund. Readjustments were made in the quotas of Paraguay and France.

In the following months the fund made an extensive study of the problems involved in establishing initial par values and in Dec. 1946, completed the major task of determining initial par values. All was thus put in readiness tor the actual exchange operations of the fund. It was specified that member countries, beginning on March 1, 1947, would be able to draw on the fund's resources to meet temporary balance of payments difficulties and could thus accelerate the achievement of domestic economic and monetary stability on higher levels of income, production, and foreign trade than would otherwise be possible. It was expected that the operations and activities of the fund would result in curtailing restrictive and discriminatory exchange practices and prevent a return to the widespread and disrupting unilateral and competitive exchange rate changes of the 1930s. Above all, it was hoped that the fund would promote a high degree of international collaboration in monetary and exchange policies and practices.

(See also Exchange Control and Exchange Rates; International Bank for Reconstruction and Development; Tariffs.)

(A. Bf.; H. D. W.)

International Organizations

During the decade 1937-46, several hundred international organizations were engaged in mutual co-operation over a wide area. Their work embraced many fields—law, economics, education and cultural exchanges, health, transport and communications, agriculture and labour and social problems.

As a result of World War II, some international agencies were forced either to suspend or drastically curtail their activities. Global warfare against the axis, however, brought the creation of many new international organizations.

Some of these were formed to co-ordinate joint war efforts, while others, such as the Allied Control Council for Germany, were established to deal with occupational and other postwar problems.

The establishment of the United Nations, which took over many of the nonpolitical activities of the League of Nations, gave a new and powerful impetus to world collaboration. Pursuant to the directive contained in Article 57 of the United Nations charter, steps were taken in 1946 to bring into relationship with the United Nations various specialized international agencies created by previous intergovernmental agreement in social, cultural, economic, health, educational and related fields.

Among the more important international bodies active during the decade 1937-46 with a brief description of each, were the following:

American International Institute for the Protection of Childhood.—Located at Montevideo, Uruguay, the institute was created in 1927 to provide an American centre of social welfare activities on all matters related to child welfare and child life, with work carried on by an international council, consisting of two delegates from each member country, supervised by a director and chosen by majority vote of the council.

Caribbean Commission.—This organization was established in March 1942 as the Anglo-American Caribbean commission to promote social and economic co-operation between the United States and its possessions and bases in the Caribbean and British colonies in the same area. It was the first agency created jointly by two colonial powers to assist them in administering their respective possessions in a specified geographical area. In 1943 the commission set up the Caribbean Research council to serve in an advisory capacity to encourage scientific, technological, social and economic research for the benefit of the peoples of the Caribbean area. In Dec. 1945 the Netherlands and France became members of the Caribbean commission.

Central Bureau of the International Map of the World.—Principal function of the bureau, located at Southampton, England, was to serve as a liaison and information agency to assist the several governments in co-ordinating plans for publishing an international map of the world on the scale 1:1,000,000, with conventional signs standardized and printed on common sheet lines. Sheets of the map, covering the U.S. and its possessions, were compiled and published by the U.S. geological survey. The bureau was established in 1913.

Combined Chiefs of Staff.—(See Chiefs of Staff, Combined and Joint).

Committee of Experts on the Codification of International Law.—Consisting of nine jurists elected by the various American governments, the committee was created pursuant to a resolution adopted by the seventh International Conference of American States which met at Montevideo, Uruguay, in 1933. Its duties were further defined and increased by the Inter-American Conference for the Maintenance of Peace in 1936, and the eighth International Conference of American States in 1938. The committee's work was divided into two phases: general codification of international law and the consideration of special topics referred to it by the various conferences.

Emergency Advisory Committee for Political Defense.—The committee was created to carry out the program of political defense agreed upon by the third meeting of the Ministers of Foreign Affairs of the American Republics at Rio de Janiero, Brazil, in Jan. 1942, soon after the attack on Pearl Harbor. Included in this program were protective measures against subversive activities by axis government agents and sympathizers. The committee, with offices at Montevideo, was composed of seven members appointed by seven American republics designated for that purpose by the Pan American Union. The Inter-American Conference on Problems of War and Peace, held in Mexico City in 1945, directed the committee to continue its work through the postwar transitional period.

European Advisory Commission.—(See separate article). European Central Inland Transport Organization.—The purpose of this organization was to assure the most efficient movement of international traffic on railroads, inland waterways and roads. Its formation resulted from an agreement signed in Sept. 1945 by 11 countries—Belgium, Czechoslovakia, France, Greece, Luxembourg, the Netherlands, Norway, soviet Russia, Yugoslavia, the United Kingdom and the United States. The agreement was later signed by Poland and Denmark.

The organization consisted of a council, on which all signatories were represented and a chief officer, or director general, with a staff.

Inter-Allied Reparations Agency. — See REPARATIONS (WORLD WAR II).

Inter-American Coffee Board.—The board, with offices in Washington, D.C., was formed under the Inter-American Coffee Agreement of 1940, to facilitate the orderly marketing of coffee during the war period. The 14 Latin American countries signing the agreement represented approximately 85% of world coffee production, with the U.S., largest coffee consumer, as the other signatory. The agreement, which fixed basic quotas for the export of coffee to the U.S., was extended to one year from Oct. 1, 1946.

Inter-American Commission of Women.—Created by the eighth International Conference of American States in 1938, the commission was charged with the permanent

study "of all the problems concerning American women." Each of the 21 American republics was represented on the commission, whose headquarters were established in the Pan American Union.

Inter-American Defense Board.—The board was created in 1942, to study and recommend measures for the defense of the western hemisphere, under a resolution adopted by the third meeting of the Ministers of Foreign Affairs of the American Republics at Rio de Janeiro. The board, composed of army, navy and air force officers appointed by the governments of the American republics, had its offices in Washington, D.C.

Inter-American Economic and Social Council.—The council was set up in 1945 to replace the Inter-American Financial and Economic Advisory committee. In addition to serving as the co-ordinating agency for all official inter-American economic and social organizations, it carried on studies on financial and economic problems arising out of the war. The council's first meeting was held in Washington, D.C., in 1945.

Inter-American Indian Institute.—The institute was formed in 1940 to conduct scientific investigations of Indian problems and promote the welfare of the Indian populations of the countries ratifying the 1940 convention. Management of the institute was vested in a governing board consisting of a representative from each member state. The director of the institute and the executive committee were to be chosen by the governing board. Offices of the institute were set up in Mexico City.

Inter-American Institute of Agricultural Sciences.—The institute was organized in 1942 to promote the development of agricultural sciences in the American republics through research, teaching and extension activities. It was divided into four major departments: animal industry, agricultural engineering, plant industry and soils, economics and rural life, each headed by a scientist whose primary concern was to organize and conduct research and teach a limited number of graduate students. The institute maintained executive offices in the Pan American Union, with field headquarters at Turrialba, Costa Rica.

Inter-American Juridical Committee.—Composed of seven experts in international law, the committee, located at Rio de Janeiro, was created in 1942 as successor to the Inter-American Neutrality committee. It dealt with four main types of problems: (1) juridical problems arising out of World War II; (2) postwar problems; (3) codification of international law; and (4) co-ordination of the resolutions of the Foreign Ministers of the American Republics.

Inter-American Statistical Institute.—The institute was created in 1941 to promote statistical development and provide a medium for collaboration among statisticians of the western hemisphere. The first meeting was held in Charlottesville, Va., in 1942. The institute in 1946 had approximately 80 members, including individuals, institutions and governments.

Intergovernmental Committee on Refugees.—The committee was organized in London in 1938 to facilitate the emigration of persons forced to leave central Europe because of their political opinions, religious beliefs or racial origin, and assist the settlement of such persons elsewhere, principally overseas. On Jan. 1, 1946, 36 governments were represented on the committee.

International Bank for Reconstruction and Development.—(See separate article.)

International Boundary Commission-United States,

Alaska and Canada.—The commission was created under the provisions of the several boundary treaties between the U.S. and Great Britain for the purpose of defining, marking and maintaining the demarcation of the international boundary line between the U.S. and Canada, and between Alaska and Canada. It established offices in both Washington, D.C., and Ottawa, Ont.

International Boundary Commission—United States and Mexico.—Set up under the convention of 1889, the commission was given jurisdiction in deciding boundary questions between the two countries. In 1932, the U.S. section of the commission took over the functions previously exercised by the U.S. section of the International Water commission, United States and Mexico. The U.S. offices of the commission were located at El Paso, Texas, and the Mexican offices at Ciudad Juárez.

International Bureau for the Protection of Industrial Property.—The bureau was established in Berne, Switzerland, in 1884 to centralize information relating to industrial property, particularly such matters as patents, trade marks and commercial names of interest to member nations. It was supervised by the Swiss government.

International Bureau for Publication of Customs Tariffs.—Functions of the bureau, established in Brussels, Belgium, in 1891, were to translate and publish in five languages—English, French, German, Italian and Spanish—customs tariffs and commercial treaties of all countries. In both World Wars, it continued to function during the German occupations of Belgium.

International Bureau of Weights and Measures.—Established in 1876 to carry on scientific investigations relating to weights and measures, the bureau was under the direction of the International Committee on Weights and Measures, composed of 18 members, each from a different country. The International committee held its first meeting after World War II in Paris, France, in Nov. 1945. Offices of the bureau were in Sèvres, France.

International Commission on Historic Monuments.— The commission was formed in 1934 to promote the establishment of organizations responsible for protecting monuments in countries where no such agencies existed, and to develop in the public mind an increasing respect for monuments. Headquarters of the commission were in Paris, France.

International Cotton Advisory Committee.—The committee was created in 1939 to keep in touch with the international cotton situation, with the ultimate goal of achieving an international cotton agreement for the regulation of world supplies in relation to demand. The principal cotton producing and exporting countries were represented on the committee. A secretariat was set up at Washington, D.C., in May 1946.

International Council of Scientific Unions.—Established in 1919 as a co-ordinating agency, the council, located at Brussels, Belgium, included representatives from approximately 30 countries in 1946. U.S. members were the National Academy of Sciences and the National Research council.

International Court of Justice.—(See separate article.)
International Criminal Police Commission.—The com-

mission was formed in Vienna in 1923 to encourage mutual assistance among the criminal investigation departments of the various nations and promote the development of institutions capable of contributing toward the suppression of crime. Following the annexation of Austria, the headquarters of the commission were taken over by the German government and removed to Berlin in 1941.

International Emergency Food Council.-The council,

composed of representatives of approximately 20 countries, was established in Washington, D.C., in June 1946 to allocate world food resources among needy nations during the postwar emergency period. It replaced the Combined Food board created in 1942 by the U.S., Great Britain and Canada.

International Fisheries Commission—United States and Canada.—The commission was set up under the convention of 1923 to conserve the halibut fisheries of the North Pacific and the Bering sea. Its powers were expanded under the 1930 and 1937 conventions. The commission had its offices in Seattle, Wash.

International Hydrographic Bureau.—The bureau was organized in Monte Carlo, Monaco, in 1921 to improve the hydrographic work of the participating governments. It was directed by a committee of three members elected at the periodic conferences of members. Although its activities were curtailed, the bureau continued to operate during World War II.

International Institute of Agriculture.—Created by the 1905 convention, which was signed by representatives of 40 governments, the institute operated as a clearing house for the collection, analysis and distribution of information on agricultural statistics, legislation and economic and technical problems. It also organized and published the results of world agricultural censuses. The institute, whose headquarters were in Rome, was dissolved in 1946.

International Institute of Statistics.—Established in 1913, the institute, located at The Hague, Neth., was a professional organization of statisticians, most of whom were officially connected with their respective governments. Its aim was to improve the quality, scope and the international comparability of official statistics. By reducing salaries and other costs, the institute was able to carry on a number of its scientific services during the German occupation of the Netherlands in World War II.

International Joint Commission—United States and Canada.—The commission was created by the 1909 treaty between Great Britain and the U.S. to decide disputes between the U.S. and Canada regarding boundaries and the use of boundary waters. The commission was composed of three commissioners representing the U.S. and three representing Canada, and maintained offices in Washington, D.C., and Ottawa, Ont.

International Labour Organization.—(See separate article.)

International Meteorological Organization.—Development of international meteorology and the standardization of meteorological services were the principal functions of the organization, formed in the Netherlands in 1878. Its offices were moved from De Bilt, Neth., to Lausanne, Switzerland, in 1939.

International Monetary Fund.—(See separate article.)

International Office of Public Health.—The office was established in 1907 at Paris to collect and distribute to member nations facts and documents relating to public health and arrange for the holding of international conferences to revise or conclude sanitary conventions. The office was supervised by a permanent committee consisting of technical representatives designated by the participating governments.

International Pacific Salmon Fisheries Commission, United States and Canada.—The commission was set up under the 1930 convention to provide for the protection and development of the sockeye salmon industry. Its headquarters were in New Westminster, British Columbia.

International Penal and Penitentiary Commission.-

The commission, organized in 1872, was the permanent executive body of the international prison congresses. Composed of penologists from each member country, its headquarters were in Berne, Switzerland.

International Seed Testing Association.—Composed of officials charged with the testing of seeds in member countries, the association was established in 1924, at Copenhagen, Denmark, to secure the standardization of seed testing methods. A congress scheduled to be held in Washington, D.C., in 1940, was cancelled by World War II.

International Sugar Council.—The council was charged with administering the 1937 International Sugar agreement, under which 17 exporting countries and the Commonwealth of the Philippines agreed to limit their sugar exports to the so-called "world-free market." The agreement was also signed by four importing countries—China, India, the United Kingdom and the U.S. The council maintained an office in London, Eng.

International Technical Committee of Aerial Legal Experts.—Organized by the first International Conference on Private Aerial Law which met in Paris in 1925, the committee was charged with developing a comprehensive code of private aerial law through the adoption of international conventions on various subjects of private aerial law. Its offices were established in Paris.

International Telecommunications Union.—The union was established in Berne, Switzerland, in 1934, as successor to the International Bureau of the Telegraph Union. The bureau of the union had two sections, one dealing with telegraph service, the other with radio service. The bureau assisted in organizing international conferences and collected and distributed to members information on international telecommunications.

International Wheat Council.—Successor to the International Wheat Advisory committee, the council, during World War II, served as a central agency for administering and co-ordinating the work of implementing the commitments of member nations to a pool of wheat earmarked for the relief of war-stricken or other needy areas. Members of the council, with offices in Washington, D.C., were Argentina, Australia, Canada, the U.K. and the U.S.

Interparliamentary Union.-Composed of members of legislative bodies, the union was established in Paris in 1888 to encourage international peace and co-operation and to study international questions suitable for settlement by parliamentary action. Membership was by national groups. Each group, limited to members of parliamentary bodies, possessed its own organization. International conferences were made up of delegates from these groups. The union established seven permanent study commissions to deal with the following: political and organizational questions; economic and financial questions; juridical questions; ethnic and colonial questions; reduction of armaments; social and humanitarian questions; and phases of intellectual co-operation. Though World War II interrupted the work of the union, many of the parliamentary groups remained intact. An entente of members of parliaments of the occupied countries, comprising groups from Belgium, France, Luxembourg, Norway, Czechoslovakia and Yugoslavia, was also set up in London.

Joint Aircraft Committee.—The first joint Anglo-American committee established in the U.S. for co-operation in the conduct of World War II, this body was organized in Sept. 1940. Originally known as the Army-Navy-British Purchasing Commission Joint committee it received in April 1941 the designation "Joint Aircraft committee."

It integrated production plans in a single production schedule, and exercised supreme authority over the approval of all aircraft contracts in the U.S. Membership included two members each from the U.S. army air forces, the U.S. navy, the British Supply council and the Aircraft Production board of the War Production board. Its activities were decentralized into a number of subcommittees, which investigated facts in individual cases and made appropriate recommendations to the committee.

Joint Brazil-United States Defense Commission.—The commission, which held its first meeting in Washington, D.C., in Aug. 1942, was created to co-ordinate the military efforts of the two countries and prepare staff plans for mutual defense.

Joint Mexican-United States Defense Commission.—Created early in 1942 to study defense problems of the two countries, the commission was instrumental in strengthening Mexican ground and air forces, training Mexican personnel in the U.S. and arranging for the use by U.S. warships and aircraft of Mexican bases and airfields.

Office of Inter-American Telecommunications.—Pursuant to a convention concluded at Rio de Janeiro in 1945 by the third Inter-American Radio conference, the office was maintained at Havana, Cuba, as an advisory, consultative and informational body. Its formation was an outgrowth of the increasing need for an inter-American agreement in the field of radio communications.

Pacific War Council.—Organized to consider broad questions relating to the war effort in the Pacific, the council held its first meeting in Washington, D.C., April 1, 1942. It was composed of the president of the U.S., and the diplomatic representatives in Washington, D.C., of Australia, Canada, China, the Netherlands, New Zealand and the U.K., with the Philippine commonwealth represented on the council by its president.

Pan-American Institute of Geography and History.— The institute was set up in 1929 to encourage the collection and dissemination of information on geographic and historical questions of interest to the Latin-American republics. Many explorations and surveys in these fields were conducted under its supervision. As a war measure, the institute in 1941 established a commission on cartography to expedite the work of surveying and mapping all the American republics. Offices of the institute were established in Mexico City.

Pan-American Railway Committee.—The committee was successor to the International Railway commission, established under a resolution of the First International Conference of American States in 1889 to determine the feasibility of an international railway from New York to Buenos Aires. Continuing the work of the commission, the committee collected information on the inter-American railway project, of which approximately 7,000 miles had been constructed in 1946. Its offices were in Buenos Aires.

Pan-American Sanitary Bureau.—Organized in 1902, the bureau became the central co-ordinating body for public health in the western hemisphere. Its functions in 1946 were laid down by the Pan-American Sanitary Code of 1924, which was ratified by all of the 21 American republics. It was supervised by a directing council, composed of leading health experts, chosen by the Pan-American Sanitary conferences. The bureau was located in Washington, D.C.

Pan American Union.—(See separate article.)

Permanent American Aeronautical Commission.—The commission was created by the First Inter-American Technical Aviation conference in 1937 to promote the codi-

fication of air law, the organization and marking of inter-American air routes and the development of air navigation facilities.

Permanent Association of Navigation Congresses.—The association was created in 1900 to promote inland and maritime navigation by means of organized international congresses. The governing body was the Permanent International commission, located in Brussels, Belg.

Permanent Association of Road Congresses.—Organization of the association was the result of the first road congress, composed of representatives of 33 nations, which met at Paris in 1908. It was formed to encourage the construction and exploitation of roads through organizing road congresses, publication of technical papers, and collecting the results of tests on materials for road construction and maintenance.

Permanent Committee of Havana.—The committee was established by the Sixth International Conference of American States in 1928 to study comparative legislation and the unification of legislation. The 1928 conference also provided for two other groups; the Permanent Committee of Rio de Janeiro on the Codification of Public International Law, and the Permanent Committee of Montevideo on the Codification of Private International Law. Membership of the three committees was originally confined to nationals of the countries where the committees were respectively located, but in 1938, the Eighth International Conference of American States adopted a resolution providing for the addition to each committee of six members not nationals of the country in which each committee was located.

Permanent Committee of Jurists on Unification of Civil and Commercial Laws.—The committee was set up in 1938 to study and prepare the unification of the civil and commercial laws of America. The committee, located at Lima, Peru, had three members, and functioned under the supervision of the law faculty of the University of San Marcos.

Permanent Court of Arbitration (The Hague).—The court was established under the Hague Convention of 1899 and 1907 to facilitate immediate recourse to arbitration of international disputes which could not be settled by diplomacy. Its organization was designed to include a panel of court members, an administrative council consisting of the minister of foreign affairs of the Netherlands and foreign diplomats accredited to The Hague, and the international bureau, consisting of the secretary general and a small staff serving as a registry for the court.

Permanent Court of International Justice.—(See separate article.)

Permanent Joint Board on Defense—United States and Canada.—(See Canadian—U.S. War Committees.)

Postal Union of the Americas and Spain.—The union succeeded the Pan American Postal Union, established at the first Pan American Postal congress held at Buenos Aires in 1921. The international office of the union, located at Montevideo, Uruguay, served as an organ of liaison, information and consultation for member countries. It assembled and distributed information concerning the American-Spanish postal service, and gave opinions on disputed questions. The office was supervised by the Administration of Post of Uruguay.

Provisional International Civil Aviation Organization. The organization was set up following the International Civil Aviation conference, held in Chicago, in 1945, in which 54 governments were represented. It was established as an advisory and technical body for a period not exceeding three years, to be replaced by a permanent civil

aviation agency. The Interim council, executive instrument of the organization, was charged with framing and recommending adoption of technical standards and procedures, and making reports on matters relating to air navigation and international air transport. The conference decided that the council should be composed of not more than 21 members, elected by the Interim assembly, meeting annually and composed of representatives of all member states. Three main committees organized under the council were the Air Navigation committee, the Air Transport committee and the International Convention committee.

Rubber Study Group.—The group was formed in Sept. 1944 by the Netherlands, the U.K. and the U.S. to consider problems of mutual concern relating to rubber—synthetic, natural and reclaim. France was later invited to participate in its work. The group made recommendations and assembled factual information for governments interested in the rubber problem.

United Nations.—For a description of the parent organization and its principal subsidiary and related organizations see United Nations.

United Nations Relief and Rehabilitation Organization (U.N.R.R.A.).—(See separate article.)

Universal Postal Union.—The union was established by the Treaty of Berne in 1874 to improve international postal communications by uniting member countries in a single postal territory for the reciprocal exchange of mail. The union maintained a central agency, the International bureau, located at Berne. The bureau, administered by the Swiss government, served as a clearinghouse of information on postal matters, and on the request of the parties at issue, arbitrated postal disputes. Although postal services were drastically curtailed or suspended with many countries during World War II, the International bureau continued to operate.

Wheat Advisory Committee.—The committee was established under the final act of the Conference of Wheat Exporting and Importing Countries, signed at London by representatives of 22 countries on Aug. 25, 1933. The committee functioned in an advisory capacity, and prepared statistical analyses of the world wheat situation for the benefit of the participating governments. The organization ceased to function with the convening of the International Wheat Council in 1942. (See also British-U.S. WAR BOARDS; CANADIAN-U.S. WAR COMMITTEES; INTERNATIONAL CONFERENCES, ALLIED [WORLD WAR II]; PAN-AMERICAN CONFERENCES, 1937—46.)

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International Refugee Organization

See United Nations.

International Trade

The years 1937 and 1938 were the last years prior to World War II in which the trade of any of the leading countries of the world could be considered more or less normal. Even during these years political tensions were high, especially after the Munich crisis in the fall of 1938.

Such tensions were not peculiar to 1937-38, however;

crisis had followed crisis in monotonous repetition after the Japanese occupation of Manchuria in 1931. Except in relatively limited areas and with reference to particular commodities, the influences of these crises on the flow of world trade were not great.

Prewar Cyclical Peak.—In 1937 and 1938, the chief interest in world trade in most countries continued to be focused on its relation to internal economic activity—a continuation of the developments of the depression years of the early 1930s. Indeed, cyclical factors appear to have had a dominating influence on the flow of trade. The year 1937 represented a peak in the recovery of world trade from the depths of the great depression.

Year to year comparisons of total world trade had always been complicated by problems of converting the values of trade for various countries from their values in the various national currencies into a common unit of measure of value. Methods of evaluating and recording exports and imports also differed between countries. Even with an international gold standard in force, the solutions of these problems were difficult; figures for total world trade had to remain approximations.

In the 1930s these problems were complicated by manipulations of exchange rates called "exchange control" and by all the other ingenious devices man could devise to restrict trade. Some of these merely limited or modified the flow of trade; others made it more difficult to measure and evaluate what trade actually did flow. Nevertheless, in terms of billions, the figures were accurate enough for rough comparisons.

During the world-wide depression of the early 1930s, the United States, the United Kingdom, Germany, France, Japan, Canada—all the large countries and most of the small ones—experienced sharp declines in their foreign trade as well as their domestic economic activity. Declining prices and increasing unemployment spread everywhere. Although the exact timing of the cycle varied between countries, total world trade reached bottom in 1932. In this year, exports of 109 countries comprising most of the world totalled \$12,600,000,000—a decline of more than 60% from the peak during 1929. Prices in world markets had dropped too, of course—by perhaps 35%. Thus the actual volume of goods exchanged had declined by approximately 40%.

Recovery was slow, hampered by the restrictions imposed by growing economic nationalism and the sometimes sincere desire to promote internal programs for recovery and reform. The year 1936 was a fairly good one for the foreign trade of most countries. By 1937, total world exports had reached \$25,000,000,000—a figure destined to become the post-depression, prewar peak. In dollar values, trade was double the depression low, although it was still 24% below 1929. Prices had also risen by some 55%. When adjustments are made for the differences in relative prices, the resulting index of the physical quantity of trade for 1937 was 30% above the 1932 low and 22% below the 1929 peak. Unemployment continued to be widespread except in Germany, Japan and Italy, where war production was already under way.

1938–39 Recession.—In 1938, the pendulum of economic activity had reversed its course, and world trade began to decline once more. As before, the decline was accompanied by recessions in the internal business activity of many countries. Both exports and imports of 21 of the 25 leading countries declined. Exports of two others declined; for one other, imports fell off. The over-all decline in exports

was 13%. Loss in the volume of the trade movement, however, was only about 8% as there was also a decline in average prices estimated at 5%. In the nature of trade, the course of world imports was similar to that of world exports.

The dominant factor in the decline of world trade during 1938 was the lower level of industrial activity in the United States, the largest consumer of raw materials. The recession of industrial activity in the United States had already influenced world trade in the latter part of 1937 and became more prominent in 1938, especially in the first half year. This development was indirectly responsible in part for the lower world export trade by cutting down the exports of the principal supplying countries. The familiar pattern of declining prices for basic foodstuffs and raw materials, and its influence toward cumulative reductions of exports and imports by countries specializing in the production of foods and raw materials for export (an important factor contributing to the severity of the great depression) was repeated. Argentina, Chile, British Malaya and the Netherlands Indies were among those caught in

In addition to the sharp reduction of imports by the United States, exceptionally large reductions also occurred in the trade of Japan, France and Italy. In contrast with the United States, deliberate trade restrictions played an important part in these reductions. The major exception to the lower level of imports was Germany which, though it curtailed imports of nonessentials, was already active in accumulating large supplies of strategic raw materials and basic foodstuffs.

Most of the evidence pointed to a continued decline in world trade during 1939 had it not been for the growth of armament activity on a wide scale and the outbreak of World War II in Sept. 1939. However, although it was a statistical fact that the aggregate turnover in world trade, imports and exports combined, for the 25 leading countries was slightly lower in dollar value during 1939 than in 1938, the abnormal character of world trade movements just before and after the beginning of the war prohibited reliable generalizations concerning them.

Depression: Breeding Ground for War.—Business cycle fluctuations in world trade affect the exports and imports of industrialized and nonindustrialized countries differently. Thus the selection of a period for a description of the pattern of world trade should include prosperous and unfavourable years. For this reason, the years 1936–38 have been used for a description of the prewar patterns of world trade.

Although largely free of war influences, the years 1936–38 were not precisely years of "free trade." They were the culmination of a decade during which internationalism had waged a losing battle against the rising tide of economic nationalism. Free trade was in its twilight. The story is a long one, but a summary of its major events may serve to recall its background. The setting was one of apparent surplus production in many lines, particularly in countries specializing in the production of war materials and staple foods. Unemployment was prevalent in many nations and continued to be so in varying degrees right up to the outbreak of World War II.

Opinions differed as to the particular event which set off the cumulative deflation on an international scale. Some held that it was the Smoot-Hawley act of 1930 which raised tariffs in the United States to record highs; some that it was the financial crisis in Europe created by the failure of

the Credit-Anstalt in Austria and the impossibility of meeting established reparations payments which necessitated the famous "Hoover moratorium." Still others held that it was the restoration of agricultural production in Europe, combined with a drive on the part of many European countries to become economically self-sufficient. In any case, the depression in the United States with its drastic reduction of incomes and industrial production in that country by itself would have had a serious impact on world markets, since the United States was then the world's second largest importer.

Countries outside Europe producing agricultural products and raw materials were having difficulties arising from overproduction and falling prices even before the Wall Street crash in Sept. 1929. The sharp curtailment of foreign lending by private investors in the United States after 1930 aggravated already difficult situations with respect to the balances of payments of many of these countries. It also endangered the balances of payments and foreign exchange positions of many industrial European countries faced with serious currency problems arising from reparations payments and service charges on debts incurred for postwar reconstruction. With many countries in debt to the United States and prices for their products falling, an increase in United States tariffs against the products which other countries might ship in payment of their obligations could scarcely be expected to ease the international situation, however justified the measure might be for internal reasons.

One thing led to another in the mounting storm which was climaxed by resort to armed conflict. In Sept. 1931 Britain abandoned the gold standard. Empire countries followed suit. Then came the first comprehensive British tariff since the repeal of the Corn laws, to be followed by the "imperial preference" system, outcome of the Ottawa conference in 1932. The "sterling bloc," a co-operative trade arrangement among empire countries and a few others, developed gradually from 1931 to 1939 as a substitute for the gold standard. When Britain declared war on Germany in Sept. 1939, the "bloc" was eliminated in favour of the "sterling area" officially recognized by statutory rules and order no. 1254 of July 17, 1940, as a war measure.

Continued deterioration of Germany's foreign exchange position in 1933 and the exclusion of its products from many foreign markets by prohibitive tariffs and other restrictive measures impelled Germany to resort to antiquated methods of foreign trading. The "Schacht" economic program gained prominence; this plan involved foreign exchange rationing, import quotas and barter deals with countries in southeastern Europe and South America for raw materials in exchange for German machinery. Exporters were granted exorbitant subsidies to enable them to undercut prices of foreign competitors in markets abroad. The practice of "dumping" became widespread. Germany was thus enabled to readjust its economy at the expense of British and U.S. exports.

Interest in international trade and affairs in the United States was at a low ebb, perhaps because the depression and its attendant internal dislocations were more severe there than elsewhere. Determination to do something about the crisis (officially termed a "national emergency") was strong. Falling prices were almost universally selected as the chief culprit. There was the belief that stringent international agreements at that time, especially with respect to exchange rates, might jeopardize the national recovery program.

When the world situation had become so involved in

1933 that a world economic conference was held in London to see what could be done about restoring equilibrium exchange rates, the United States would make no definite commitments. It also withdrew from discussions of trade agreements. The Conference broke up in utter confusion, to be followed by programs of bilateralism and self-sufficiency in the participating countries. Nevertheless, from 1934 to 1939 the United States negotiated some 30 "reciprocal trade agreements" with other countries. These reduced its tariff rates on certain items in exchange for complementary easing of restrictions.

Meanwhile, the end of German reparations payments in 1932 precipitated growing economic disorganization in France. Devaluation of the British pound and the U.S. dollar adversely affected French foreign trade. After the resumption of the gold standard in 1926, French exports had declined continuously, until in 1936 their value was the lowest since World War I. The struggle to maintain the gold parity of the franc was founded upon a fear of devaluation engendered by postwar experience with currency inflation. In Sept. 1936 the five-month-old Popular Front administration capitulated to the external economic pressure for devaluation and revalued the franc. However, the outflow of gold and capital continued, and further devaluations were necessary in 1937 and 1938.

On the other side of the world during this same period, Japan was enjoying a steadily increasing trade, stimulated by currency depreciation. In and out of the "sterling bloc" as it saw fit, Japan dispersed its trade over a large territory to obtain the necessary exchange to purchase the needs for its expanding empire. The Japanese militarist government was already intent upon putting its Greater East Asia plans, blueprinted in 1927, into effect. Established economically and militarily in Manchuria in 1931, Japan retired from the League of Nations in 1932. By 1937, open warfare broke out in China, and the Greater East Asia campaign was in full swing.

Such were the conditions of "free trade" among the five leaders of the world's export-import trade during 1937–38.

The British postwar export drive was evidenced by these crated Austin cars stacked at Collyer quay in Singapore, where transport vehicles were badly needed in 1946



"Beggar thy neighbour" economic policies to alleviate domestic difficulties were popular. Governments made special concessions to other governments. Some adopted stiff measures requiring close supervision and licencing of foreign trade transactions, export and import quotas and the manipulation of exchange. Government cartels flourished as a result of high tariffs. Russia had long since forsaken the free market completely. Brazil burned its coffee and the United States plowed under its wheat. Australia, India, China and Argentina, among others, were trying to industrialize their economies. Each in its own way strove to weather the tidal wave of the engulfing economic maelstrom.

Underlying Forces.—Despite all these restrictions, a sizable world trade continued to flow in channels which indicated that fundamental principles of economic specialization were at work on an international scale. In man's struggle to obtain a living, certain basic factors must be teckoned with, whatever the system of political and economic organization at the national and at the international level.

Tea and citrus fruit will not grow in England. The United Kingdom must trade for them or go without. It is impossible to grow enough wheat in western Europe to feed the dense population without assistance from the fertile plains of Argentina, Australia, Canada, the United States and southeastern Europe. Other, more productive lines of endeavour must be found. The presence of coal and iron in the United Kingdom and Germany coupled with large, technically skilled populations living on limited land-areas and possessed of relatively large capital accumulations, made inevitable the exchange of manufactured goods by these countries for foods and raw materials produced elsewhere.

These examples merely illustrate the fairly obvious fact that differences between nations in population densities, natural resources, capital accumulation and technical skills of their people make trade between outlying areas and industrial centres of the world economically desirable. Raw materials and foods are exchanged for manufactured goods. This fundamental basis for trade had been operative for several centuries. Its importance and the geographical scope of its influence increased rapidly after 1870 as a result of technical improvements in production, transport and communication. By the beginning of the 20th century, it embraced almost all countries.

Less widely recognized, but equally important as a basis for international trade was the growth of specialization in manufacturing. World commerce is not restricted to an exchange between classes of goods—manufactures against raw materials and toodstuffs. It is really an exchange of particular commodities, highly specialized in themselves, dependent on specialized resources, and becoming more specialized every day. By 1936–38, the variety and complexity of manufactured products was so extensive that a high degree of specialization and a large volume of trade between industrialized countries themselves had developed.

Thus, on the eve of Munich, world trade was under two conflicting pressures; on the one hand, developments in mass production methods and equipment were fostering specialization and forcing manufacturers to search for ever wider markets for their products and for new sources of the raw materials from which to make them. Improvements in communication and transportation were making it more convenient for them to contact potential customers or suppliers of raw materials throughout the world and

reducing their costs of shipping products.

Opposed to these forces of trade expansion were growing walls of economic nationalism brought on by the struggle with internal unemployment, economic stagnation and the increasing fear of impending war. The large volume of international trade which continued to exist was evidence of the great strength of the economic forces underlying trade between nations.

Prewar Trade Pattern.-The total turnover of world trade (exports plus imports) was \$47,000,000,000 annually during 1936-38. World income in these years averaged an estimated \$190,000,000,000. While the trade figures ignored the international exchange of services such as insurance, banking, shipping and tourist travel, they gave an indication of the magnitude of international commodity movements and their importance in the world economy. Exports plus imports averaged \$22.40 per capita the world

The bulk of this trade was carried on by a small number of countries. These countries traded with nearly all the remaining countries, most of which did little other trading. In addition, the leaders carried on an extensive commerce among themselves. Twenty-five countries accounted for four-fifths of the world's trade (Table I). The United Kingdom was first in imports, second in exports

Table I.—Twenty-five Leaders of World Trade (Values in millions of U.S. dollars)

				w	onthly Ro	ite
	1936-	38 Monthly	y Rate	Jan.	to Aug.	1946
Country	Total	Exports	Imports	Total	Exports	Imports
United Kingdom	606.5	223.4	383.1	716.8	305.6	411.2
United States	448.9	243.8	205.1	1,170.7	787.2	383.5
Germany	344.7	176.7	168.0			
France	205.3	77.7	127.6	210.1	52.7	1 <i>57.4</i>
Japan	190.3	93.4	96.9			
Canada	134.9	76.9	58.0	313.4	174.4	139.0
Belgium and						
Luxembourg	131.0	62.8	68.2	118.4	44.6	73.8
Netherlands	110.3	46.8	63.5	85.3	1 <i>5.7</i>	69.6
British India	104.9	<i>57.7</i>	47.2			
Italy	89. <i>7</i>	41.1	48.6			
Australia†	84.2	45.1	39.1	107.2	58.3	48.9
Argentina	83.3	47.7	35.6	122.5	79.7	42.8
Sweden . '	79.0	37.8	41.2	105.6	47.9	<i>57.7</i>
British Malaya	62.1	34.0	28.1			
Czechoslovakia‡	57.9	30.4	27.5	23.8	13.1	10.7
Denmark	<i>55.7</i>	26.9	28.8	64.9	23.4	41.5
Switzerland	56.0	24.0	32.0	112.4	48.7	63.7
Netherlands Indies	54.1	34.2	19.9			
Union of South Africa	50.2*	14.3*	35.9			
Brazil‡	49.7	26.6	23.1	120.0	72.8	47.2
U.S.S.R	44.8	23.2	21.6			
China	42.0	19.0	23.0			
Korea	38.6	17.2	21.4			
New Zealand‡	36.6	19.5	17.1	46.7	28.7	18.0
Mexico	30.0	18.4	11.6	66.1	27.2	38.9
	3,1 <i>9</i> 0.7	1,518.6	1,672.1			
Eighty-four other countries .	720.3	365.6	354.7			
Total 109 countries	3,911.0	1,884.2	2,026.8			

^{*}Excludes gold exports valued at approximately \$27,000,000 per month.

Note: In general, exports are valued f.o.b.; imports, c.i.f. Export figures for Argentina, Australia, British India, Mexica, New Zealand and the United Kingdom include re-exports. Import figures for Australia, British India, New Zealand and the United Kingdom represent general imports. In general, data include shipments of munitions, government stores and U.N.R.R.A. supplies.

and first in total foreign trade. Although the United States ranked first in exports, relatively lower imports gave it second rank in total trade. Germany, France and Japan were third, fourth and fifth respectively. Together these five countries accounted for 45% of the world total.

A great variety of goods entered into prewar international trade. Nearly every conceivable product was represented. Over half the trade, however, was concentrated in a relatively limited number of commodities-about 25 -comprising foodstuffs, raw materials and manufactured goods. Principal foodstuffs included wheat and wheat flour, sugar, butter, coffee, meat, tea and rice. Cotton, coal, crude petroleum, gasoline and fuel oil, wool, tobacco, copper and rubber were the raw materials which led in total value of trade. Among the more important manufactured goods were machinery, iron and steel mill products and their manufactures, textile fabrics, chemicals, automobiles and paper and paper manufactures.

Three-fifths of the world's trade in commodities was in the exchange of food and raw materials for manufactured goods between industrialized and nonindustrialized countries (Table II). The definition of an industrial country

Table II.—Prewar Trade Between Industrialized and Nonindustrialized Countries (1938 annual values in millions of U.S. dollars)

Flow of Exports:	Value of 1938 Exports	Percent of World Exports
Exports of 12 Industrial Countries: To each other	6,800 6,600	31 30
Exports of Nonindustrial Countries: To industrial countries To each other Total exports 109 countries	 7,100 1,500 22,000	32 7 100

Note: The 12 industrial countries include all countries for which exports of semi-and finished manufactures were more than 50% of total exports. Those included are Bel-gium, Czechoslovakia, France, Germany (including Austria), Italy, Netherlands, Sweden, Switzerland and the United Kingdom in Europe; plus Canada, Japan and the United

varied with the point of view, of course. Nearly all countries were engaged in the local manufacture of some products, even though their imports were nearly all of manufactures and their exports of foods and raw materials. The countries selected here as industrialized were active in manufacturing for export markets as well as for domestic consumption. They include all countries which had more than 50% of their exports in manufactured goods.

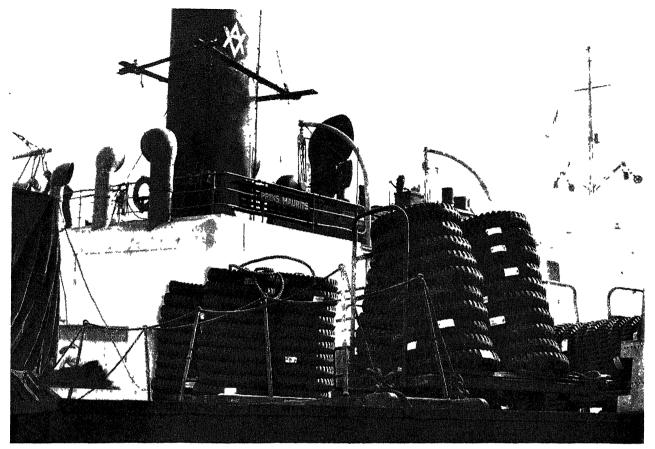
Table III.—Leading Commodities and Leading Exporters in Prewar World Trade (1938 annual values in millions of U.S. dollars)

(1938 annual values in millions of U.S. dollars)				
٧	√orld Expor	rts		
Commodity or Group	1938	Leading Exporters		
Machinery	1,595*	United States, Germany, United Kingdom and Switzerland		
Iron and steel mill products	1,226*	Germany, United Kingdom, United States and Belgium		
Textile fabrics	1,008*	United Kingdom, Japan, Germany, Italy, France and India		
Chemicals and related products	807*	Germany, United States, United Kingdom and France		
Cotton	600 569	Egypt, India and United States Argentina, Australia, Canada, Hun- gary, Rumania, U.S.S.R., and		
Coal	530	United States Germany, United Kingdom, United States		
Automobiles including parts and	} 490*	United States, United Kingdom and Germany		
accessories	448	Venezuela, United States and U.S.S.R.		
Wool	435	Argentina, Australia, Uruguay and South Africa		
Gasoline	394	Aruba, Curacao, Iran, Iraq, Nether- lands Indies and United States		
Tobacco	359	Bulgaria, Cuba, Greece, Nether- lands Indies, Turkey and United States		
Paper and manufactures	356*	Canada, Germany, United King- dom, United States and Sweden		
Sugar	340	Australia, Cuba, France, Philippines, Netherlands Indies and South Africa		
Copper	325	Belgium, Chile, Mexico and United States		
Butter	304	Australia, Denmark, Netherlands and New Zealand		
Gas and fuel oil	298	Netherlands Indies and United States		
Rubber	287	British Malaya and Netherlands Indies		
Yarns and threads	281*	United Kingdom, Italy, Belgium, France, Germany and Japan		
Coffee	263	Colombia, Brazil and Venezuela		
Beef, lamb, mutton	222	Argentina and Australia		
Maize	220	Argentina and United States		
Pork and products ,	216	Canada, Denmark, Hungary, Po- land and Netherlands		
Tea	202	Ceylon, India and Netherlands In- dies		
Rice	197	French Indo-China, India and Siam		
Total of 25 commodity groups Total world exports	11,972 21,824	,		
and the same of th	21,024			

Source, Values for raw materials and foods are from Network of World Irade, League of Nations (Geneva, 1942). Values for manufactures (marked *) were compiled from the Foreign Commerce Year Book, U.S. Department of Commerce. Raw material and food values cover all countries, values of manufactured goods include only exports of the 25 leading countries of world trade. Countries listed for raw materials and foods are arranged in alphabetical order; those listed for manufactures (marked *) are arranged in the order of their importance. In general, the countries listed for each commodity cover 75% or more of total world exports of the commodity.

[†]Jan. to May 1946.

LJan. to June 1946.



The Dutch vessel "Prins Maurits" which completed its first postwar voyage from Holland to Chicago, Ill., in July 1946, is shown being loaded with a return cargo of tires

Nearly all the leaders of world trade during 1936–38 were industrial countries. With the exception of British India, the first ten were in this class. Geographically there were three regions of industrial concentration: the United Kingdom, Germany, France, Belgium, the Netherlands, Italy, Sweden, Czechoslovakia and Switzerland in Europe; the United States and Canada in the western hemisphere; and Japan in the far east. These countries were all in the temperate zone of the northern hemisphere.

Although all these countries produced a fairly wide range of manufactured goods, each had particular specialities in which it enjoyed recognized superiority. The United States, for example, was famous for its automobiles, the United Kingdom for its high-grade textiles. Germany was renowned for its optical goods and chemical industries, and so on down to the smallest, Switzerland, for its watches.

Leading producers of food and raw material exports were more widely distributed over the earth's surface than were manufacturers. This was partly because a number of industrialized countries were also important suppliers of certain raw materials. Cotton, the world's leading raw material export, was shipped by the United States as well as India, Egypt and Brazil. Coal was shipped by the United Kingdom and Germany. Crude petroleum, wheat, tobacco, copper, maize, iron ore and silk were among other leading raw materials shipped by both industrialized and nonindustrialized countries. A list of the leading commodities in world trade and the countries exporting them in the largest amounts is shown in Table III.

Trade among the industrial countries themselves was an important part of the pattern of prewar world exports.

The size of this trade—\$6,800,000,000 of exports in 1938—belied the fears expressed by some that the trend toward industrialization in raw material and food producing countries would be injurious to the future trade of already industrialized countries. For one thing, many industrial countries continued to supply important raw materials and foods. The United States led the world as a supplier of cotton, tobacco and maize; the United Kingdom and Germany, coal; France, wines and liqueurs; Japan, raw silk; Canada, wheat, metals and minerals; and so down the line to Swiss cheese.

An important trade in manufactured goods also existed between the 12 industrial countries. This trade showed that there was a place for international specialization even in manufacturing. Superior products and increased productive efficiency resulted. Purchasers of industrial equipment were able to select machines which met their particular requirements. Consumers had available a wide variety of products from which to choose those satisfying their individual tastes and incomes.

Historically the industrialization of a country had always been accompanied by an increase of its foreign commerce. Imports as well as exports grew when industrialization was not "forced" artificially. As long as the country's natural resources remained undepleted, it continued to supply its particular raw materials and foods to other countries. And the increased incomes resulting from improved efficiency enabled it to import more of the foods and raw materials with which it was not supplied, as well as more varied types of manufactured goods. The spread of industrialization brought with it some changes in the relative importance of particular commodities and particular countries in world trade. Generally all gained, although not equally. From a world point of view, this was

quite acceptable as a normal consequence of economic progress.

Four Major Trading Areas.—The existence of an overall pattern of world trade during 1936–38 is clear from the above discussion. It would be a grave mistake, however, to assume that the world was one great market place in which all buyers and sellers were equally free to move from place to place to transact their business. Within this over-all pattern were several more limited patterns or "spheres of economic influence." These resulted in part from economic factors such as distances and transportation costs, in part from differences in languages, traditions and customs. Political considerations also had their influence. Four major trading "areas" existed, each led by a top-ranking industrial power.

United States.—Measured by the value of trade, the U.S. "area" was the largest, although the lines of demarcation were less clear than for the others. With some danger of oversimplification, the trade could be briefly summarized as one of exports chiefly of manufactures to Canada, Latin-American countries and the far east. Imports from these areas were largely of raw materials and special foods such as sugar and coffee. The United States had an export balance with Canada; an import balance with most Latin-American countries. In the far east it had an export balance with Japan, Australia and New Zealand, and an even larger import balance with such countries as British Malaya, India, Ceylon and the Netherlands Indies.

On the export side, trade was supplemented by extensive exports of cotton, tobacco, petroleum and petroleum products, wheat, maize and a variety of semi-finished and finished manufactured goods to the United Kingdom, France, Germany, the Netherlands, Belgium, Italy and other European countries. Although the United States also imported from European countries, its merchandise export balance to this area was large.

While the United States was the chief customer and supplier of most Latin-American republics, the United Kingdom, Germany and other industrialized European countries also relied to some extent upon this area for supplies of raw materials and food, and found in it a market for their manufactures. This was particularly true in Argentina, where the United Kingdom outbought and outsold the United States, and Germany ran third. Elsewhere Germany sold about half as much as the United States and about twice as much as the United Kingdom. Its purchases were about equal to those of the United Kingdom and approximately one-fourth those of the United States. Japanese trade in this area during 1936–38 was relatively unimportant.

Over 60% of Canada's imports were from the United States, whereas the United Kingdom supplied less than 20%. Its export trade was more evenly divided between the two countries, however, with 41% going to the United Kingdom and 34% to the United States. The remaining trade was widely dispersed.

In the far east, the United States held a far less commanding position. Only in China did it hold first place in both exports and imports, and this position was closely contested by Japan, Germany and the United Kingdom. Japan's chief supplier was the United States, from which it received raw cotton, metals and machinery. On the export side, however, Japan's chief customer was Korea¹; the United States, with large purchases of raw silk, was second. In British Malaya, the United States also took a leading

position as a buyer of rubber and tin.

United Kingdom.—The British trading system was founded on the United States as its chief single supplier. Shipments of raw cotton, tobacco, wood, food and machinery received from the United States made up 12% of the United Kingdom's imports. However, the bulk of Britain's imports—40%—was obtained from "British" countries. Canada, Australia, India and New Zealand were the leaders. With most of these countries except the Union of South Africa, Britain had large net import balances. These were offset by "invisible" items in the balances of payments such as income from foreign investments and shipping charges. Because of Britain's limited terrain and consequent concentration on manufacturing, foods as well as raw materials were important among the commodities received.

The remainder of the United Kingdom's imports were obtained chiefly from European countries and the American republics, particularly Argentina. Again food was as important as raw materials in dictating the distribution of trade. Denmark and the Netherlands sent butter and eggs to England. Germany and Sweden shipped paper and wood. France, European Russia, Ireland, Belgium and Finland were also important suppliers. The proximity of these countries to England and the nature of this trade was reminiscent of the truck farming and industrial subcontracting developing around large cities.

All told, northern and western European countries provided more than 20% of British imports. In this area Britain was in direct competition with Germany for supplies. The two were almost always the first and second ranking customers with some other country; frequently the United States was a poor third. Usually the United Kingdom held first place. Its total purchases were nearly double the value of Germany's.

On the export side, England's largest markets were in the so-called "British" countries which took nearly half of its total exports. Australia, India and Canada were the leading customers. Taken individually, the export trade with northern and western European nations was not important. The largest value was \$103,000,000 annually to Germany (fifth in rank). Nevertheless, this group of countries combined accounted for one-fourth of total exports and constituted the second largest area of British trade. Again Germany and the United Kingdom were in competition, with Germany holding a slight edge for exports to the group as a whole. Germany's lead was largest in the Netherlands and Sweden; the United Kingdom's in Denmark. Important individual countries in other parts of the world were the United States, third, with 5.2% of total United Kingdom exports; and Argentina, eighth, with 4.0%.

Germany.—Germany's first eight customers were in northern and western Europe. The Netherlands, the United Kingdom and Italy were most important. The United States was ninth. Its Latin-American export markets trailed far behind, led by Brazil in 10th place, and Argentina in 11th. Imports were obtained from a wide variety of countries, some of them industrialized, other agricultural. The United States and the United Kingdom were the two leaders. No single geographic region was a dominant source, although northern and western European countries supplied the largest proportion of the total, 37%.

The "Drang nach Osten" was producing results. Between 1936 and 1938, the export-import trade with southeastern Europe increased sharply. However, this trade remained relatively small compared with the total. In 1938, the most important countries of the group, Rumania and

Treated as separate customs area in this article.

Czechoslovakia, ranked 9th and 11th in exports; and 11th and 9th in imports respectively. In these countries Germany held the dominant position in export-import trade; the United Kingdom or the United States was usually the nearest competitor.

German imports from North and South America also increased sharply. In part this was because of stockpiling, in part because of increased raw material and food consumption accompanying expanded industrial activity in armament and other lines. Shipments of mineral oils, ores, copper, iron and steel scrap, machinery and automobiles from the United States, its chief supplier, increased manyfold.

Japan.—Japanese trade was primarily the trade of a single industrialized country with a number of less developed agricultural and raw material producing countries. In this respect it differed from the trade of other leading powers. Although the highly-industrialized United States was its chief supplier and second largest customer, in normal years this trade was largely an exchange of raw materials—silk for cotton. Korea, Manchuria (including Kwantung) and Formosa were its other chief customers and suppliers. Together they took 46% of the exports and provided 34% of the imports. In these markets Japan had undisputed supremacy.

Other major trading markets were India and Burma, China, the Netherlands Indies, Australia and British Malaya—all countries in the far east. Leading export markets were generally important supply sources and vice versa. In these countries Japanese trade was usually exceeded in value by that of the United Kingdom, the United States or both. Trade with non-Pacific countries during 1936–38 was relatively small and widely dispersed. There were sizable exports to Britain and imports from Germany.

Textile yarns, fabrics and clothing led the list of Japanese exports. Raw silk was also important. Large shipments of machinery and metal manufactures were made to such countries as China, Formosa, Korea and Manchuria. Raw cotton and wool, metals and ores, and rice were among the leading imports. Like Germany, Japan carried on a considerable stockpiling program during 1937 and 1938. Imports of raw cotton from the United States were reduced, and the foreign exchange was used to obtain metals and scrap iron, machinery and oils.

The Line-Up.—At the outbreak of World War II, the United States held a predominant position in the trade of the entire western hemisphere. It shared the trade of the Pacific far east with Japan and the United Kingdom. In addition, it had a considerable export and somewhat smaller import trade with industrialized countries in Europe. The United Kingdom's sphere of economic preference was in the so-called British countries. The exportimport trades of India, Australia, New Zealand, the Union of South Africa, Burma and Ceylon were largely with the United Kingdom. Northern and western European countries were a second important group. Here the competition with Germany was particularly keen.

Germany's chief trading area was in northern and western Europe (including Italy). Commerce with Latin America was small, but growing. In eastern and southeastern Europe, Germany's position as a leader was firmly established, although the value of trade was small.

Japan had virtually a complete monopoly of Korean and Formosan trade and an overwhelming dominance in the trade of Manchuria. Its considerable trade with other far eastern countries was usually in competition with the United Kingdom and the United States, particularly in

China. In the occident, its chief trade was the exchange of raw silk for raw cotton with the United States. Exports to Britain and imports from Germany were also important.

When Germany marched into Poland in Sept. 1939, "Deutschland über alles" was still just a melody in the economic sphere. Britain's internal and overseas agricultural, mineral and industrial resources alone were superior to Germany's. When the resources of the United States were also considered, ratios became meaningless. The Germans knew this. Economic as well as military strategy dictated the "blitzkrieg." The Germans expected

First postwar shipment of raw silk from Japan being unloaded in April 1946 at the Seattle, Wash., port of embarkation



to win before the superior economic resources of their potential enemies could be mobilized for war.

Forging the Weapon of Foreign Trade.—How the Allies used close co-operation in the field of foreign trade to help them win the war was clearly portrayed in the statistics of their wartime imports and exports. Geographic and labour specialization were employed to the "nth degree." Space and time were almost annihilated; a bridge of ships was built to carry the tremendous flow of supplies and matériel.

Each country played its part. The specialization of the United States and Canada on the industrial production front was spotlighted by unprecedented increases in their exports. U.S. exports during 1942–44 averaged \$11,800,000,000—four times their 1936–38 average. Canada's exports for the same years tripled. While part of each rise was due to price increases, the physical quantities of exports of both countries more than doubled. And this was exclusive of shipments by either country to its own armed forces abroad.

Rapid expansion of production naturally increased raw material consumption. The part played by the Latin-American republics was complementary to the industrial production of the United States. Food and raw materials such as metals, fibres, nitrates and petroleum were supplied in ever-increasing amounts. Exports during 1944 were 72% higher than in 1938. The Latin-American republics also cut down on imports for consumption. Because of the supply situation for manufactured goods, the value of imports of these countries remained at prewar levels or below, except for 1944.

In keeping with Britain's proximity to European fighting fronts and its specialization on munitions production in accordance with the lend-lease agreements, the United Kingdom's total export-import trade declined considerably. Imports rose, but not enough to offset the decline in exports. For 1943-44, imports averaged \$5,100,000,000 (1942 was low because of submarine losses). This was 12% above the 1936-38 average. In contrast, exports averaged \$1,020,000,000-some 62% below 1936-38.

In the Pacific, the role of foreign trade in helping to win the war was less clearly defined in the statistics; for one thing, there were fewer reliable statistics. Australian imports increased somewhat; exports were considerably below prewar levels in most years. The total trade of British India declined—exports more than imports. Like the United Kingdom, these countries were closer to fighting fronts than were the western hemisphere countries, so their trade reflected the effects of intensive defense preparations and lend-lease imports.

Thus the Allies' wartime trade was founded on familiar principles. Developments in mass production techniques and improvements in transportation, twin forces which had been driving the world toward a single economy even before the war, received a tremendous impetus. Although manufacturing countries found some synthetic sources of raw materials and raw material countries developed some manufacturing, on the whole the interdependence of countries appears to have increased during the war.

Before this close co-ordination of industrial production, civilian consumption and military supply could be achieved on an international scale, a number of political and organizational problems had to be solved. Not until lendlease was enacted did a sound basis exist upon which a unified interallied war economy could be established. Until this time the Allies stumbled along after Munich, improvis-

ing devices to meet pressing difficulties as they arose. The United States did not even know it was in the war.

The change in U.S. policy from strict neutrality to all-aid-short-of-war was gradual and fraught with the sharpest controversy. The Neutrality act of 1935 and its subsequent amendments had placed an embargo on the shipment of arms, ammunition and instruments of war to any belligerent. Two months after the outbreak of war between the major European powers, this act was repealed and the "cash and carry" system was instituted. Ships flying the U.S. flag were still prohibited from carrying exports of munitions, however.

As a direct result of this change in sentiment in the United States, the British Purchasing commission was organized for the purpose of buying war supplies in that country. The French, Chinese and Russians also established purchasing agencies in the United States. Contracts for war materials and equipment were placed directly with private producers. In many instances the contracts provided for financing the construction of facilities as well as the purchase of production once these facilities were in operation. Originally these orders were placed primarily as insurance against unexpected losses, but gradually, as the impact of war became more acute, they assumed tremendous proportions.

The increasing demands of belligerents upon U.S. supplies of raw materials and military equipment were fast depleting its national resources in 1940. Defense planners in that country watched with deep concern as the very materials and equipment they needed themselves left the country. Efforts to control exports by means of "moral embargoes" to prevent shipments of certain materials and equipment, particularly machine tools, met with little success. In June 1940 the Rubber Reserve and the Metals Reserve companies were set up under the authority of the Reconstruction Finance Corporation act to conserve and replenish stockpiles of strategic materials, many of which were obtained from overseas sources in danger of being cut off. On July 2, 1940, congress passed "An Act to Expedite the Strengthening of the National Defense." This act granted the president authority to prohibit or curtail the exploration of military equipment, munitions or components thereof; and machinery, tools and materials necessary to manufacture, operate or service such machinery.

Latin-American countries were also affected by the outbreak of war. Valuable sources of supply and markets for home goods diminished as one European country after another fell under the nazi blitz. A conference of ministers of foreign affairs of the American republics held in Sept. 1939 was followed by subsequent meetings at irregular intervals. The United States undertook to provide the import requirements of these countries in adequate volume to maintain their economic stability in return for assured co-operation in defense preparations and in supplies of raw materials. In July 1940 congress passed the Pitman act, which provided for the procurement of arms and implements of war for South American countries. To assist in the prevention of shipments to axis countries, export controls were enacted by many of the American republics. Import controls were adopted to assure a satisfactory distribution of the limited supplies of foreign goods available.

A Canadian-U.S. Joint Board on Defense was inaugulated at Ogdensburg, N.Y., in Aug. 1940. A further basis for economic collaboration between the United States and Canada was established in April 1941 by the Hyde Park agreements. Specialization in production and exchange of defense materials were provided for. Trade between the

two countries was exempted from export controls. This was followed in May 1941 by a Material Co-ordinating committee comprised of representatives from the U.S. Office of Production Management (later the War Production board) and the Canadian Wartime Industries board.

In the United Kingdom, controls were established over imports, exports and foreign investments and balances. Shortly after Britain's declaration of war, the ministry of economic warfare was formed, to plan and administer all activities designed to injure the axis economy. The "paper blockade" together with the destruction of the axis' strategic industrial facilities were its chief weapons. In developing the blockade, M.E.W. necessarily solicited the aid of the dominions and neutrals. The British Export council was organized in the spring of 1940 to implement a drive to expand exports for the purpose of obtaining foreign exchange. The magnitude of Britain's import requirements for military purposes and the need for diverting internal production to military channels, however, soon made it clear that this was not a satisfactory solution. As foreign balances dwindled, outside assistance became imperative.

To maintain the pipe line of tanks, guns and planes to Britain was of prime importance to the defense plans of the United States. Experience after World War I had shown that a loan was not the solution. The plan finally evolved was simple. The U.S. government would place all contracts for war goods to be manufactured in the United States. What was essential for the defense machine would remain at home, what would be more useful to the defense of the United States if used in Great Britain could either be leased or sold subject to mortgage to the people on the other side. British industry could concentrate on military production. By subsequent agreement, exports involving materials received by Britain under lend-lease could not be shipped without previous consultation with the United States. The British Export council was reorganized into the Industrial and Export council, and its attention was focused on the development of war and home civilian production. The congressional act of March 11, 1941, provided the means to furnish "defense articles" in any manner to the government of any country whose defense the president deemed vital to the defense of the United States. Thus, in retrospect, lend-lease became the cornerstone upon which the structure of Allied teamwork was subsequently built-the mechanism through which the United Nations were later to pool their entire resources for the winning of final victory.

During 1941, productive capacity in the United States was still not fully utilized, and considerable unemployment remained. Furthermore, production in nonessential consumers goods lines continued to draw upon supplies of critical war materials. With the United States' entry into the war, however, military production sights were raised and the United States geared itself for war production in earnest. To provide for collaboration on the military and industrial production fronts, a number of U.S.-British boards were established. (See British-U.S. War Boards.)

Wartime World Trade

The Japanese attack on Pearl Harbor divided the world into three areas almost entirely cut off from each other by force of arms. The size of the regions and the volume of trade within them became dependent on the fortunes of war. A few countries remained technically neutral, among them Sweden, Switzerland, Spain, Portugal and Turkey; their trade, however, was guided by the political pressures of belligerents and by the possibilities of transportation

March 1941 - Dec. 1	945			
(Values in millions of U.S. dollars)				
Country	Lend-Lease	Roverse Lend-Lease		
British Empire	\$30,753	\$6,306		
U.S.S.R	11,141	2		
France and possessions	2,377	868		
China	1,336	4		
Brazil	319			
Other American republics	115			
Netherlands	178	2		
Belgium	83	155		
Greece	77			
Norway	38			
Other countries	100	9		
Total	\$46,517	\$7,346		
Aid not charged to foreign governments	2,579	• •		
Total lend-lease aid	\$49,096			
Source: Twenty-second Report to Congress on Lend-Lease Operations.				

Table IV .-- United States Lend-Lease Aid by Country

The extent to which foreign trade was disrupted by the war situation in 1943 is shown in Table IV. About \$20,000,000,000 in exports and imports (about four-ninths of prewar world trade) which normally flowed between the three regions (1938) was cut off. In the Allied region, which comprised North and South America, Oceania, parts of Africa and Asia, the United Kingdom and the U.S.S.R., this loss of trade was more than offset by the tremendous expansion of trade between the Allies. Such statistics as were available indicated that no such growth of intraregional trade developed in the areas under German and Japanese domination.

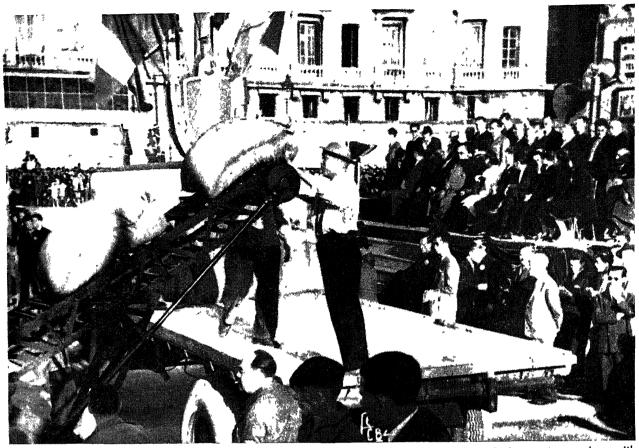
The Cornerstone: U.S. Trade.—The wartime export movement from the United States reached its peak, in terms of dollar values, during 1944. Lend-lease exports rose to \$11,300,000,000 and total exports to \$14,300,000,000. These were exclusive of supplies destined for the armed forces of the United States in foreign countries.

Higher prices contributed to the increase in value of U.S. foreign trade during the war, of course. The exact amount of the price rise was difficult to determine since many new commodities entered into the wartime trade. Estimates of the U.S. department of commerce indicated that export prices were about 67% higher in 1944 than in 1936–38. The volume of goods shipped in 1944 was roughly three times the annual shipments during 1936–38 and double the prewar peak of 1929.

Even as early as 1939, total U.S. exports began to expand under the impetus of war orders. Under the terms of the arms embargo such shipments were limited to industrial equipment (such as machine tools), raw materials and supplies. When the arms embargo was repealed and the "cash and carry" system instituted, orders and shipments of combat weapons pyramided. This system favoured exports to Britain because it had the ships and large foreign investments which could be liquidated to obtain dollars. Considerable exports were also made to France.

By the fall of 1940, Britain's foreign balances were becoming exhausted. Canada, India, Australia and New Zealand were accepting credits in London in return for their exports. Some method had to be devised if the flow of munitions from the United States to the United Kingdom was to be maintained and England kept in the war. Lend-lease was the answer.

Lend-Lease Exports.—With the adoption of lend-lease, all military procurement in the United States was centralized under the government. Direct purchases of military equipment and strategic materials by foreign governments came to an end, and a new category, "lend-lease shipments," appeared in the U.S. export classification. The Lend-Lease administration was set up to determine foreign requirements, act as claimant-agent in allocation meetings and arrange for shipments.



First shipment of Russian wheat and barley sent in accordance with a Franco-Soviet agreement to help relieve the French bread crisis, is shown arriving at Marseilles in April 1946. The occasion was observed by ceremonies at the dock

After a certain amount of delay while orders were being placed and pipe lines filled, shipments began to expand rapidly. In 1944, they reached \$11,305,000,000 or 80% of total exports. During the four and one-half years in which the lend-lease program was in operation, the United States exported goods valued at \$33,000,000,000 to the Allied nations. Geographically, 42% went to the United Kingdom, 29% to the U.S.S.R., 10% to Africa and the near east, and 12% to the far east (chiefly China). The remaining 7% represented supplies destined for western hemisphere countries, including those which Canada procured through lend-lease facilities but paid for. Goods procured by the United States in other countries for lend-lease shipment, and shipping and other charges brought the total to \$49,096,000,000 as of Dec. 31, 1945 (Table V).

Table V.—World Trade Interrupted by the War (In millions of U.S. dollars)

Groups of Countries	Total Turnover (Exports plus Imports) in 1938	Trade Interrupted by the War	Percentage of Trade Cut Off
Continental Europe	 17,400	8.000	46
Rest of Europe	 6,800	2,400	3.5
United States	5,000	2,100	42
Rest of North America	 1,600	200	13
Latin America	 3,900	1.300	33
U.S.S.R	 500	400	80
Japan and Southeast Asia	 3,500	2,200	63
Rest of Asia	 3,200	1,400	44
Africa	 2,600	1,400	54 .
Oceania	1,600	400	25
Total for the world	 46,100	19,800	43
		•	

Source "Annual Report" of the Bank for International Settlements, published in Federal Reserve Bulletin, Sept. 1945.

The full economic significance of this phenomenal growth of exports is missed until we realize that combat equipment and ammunition were only a small part of the staggering total. Industrial machinery, motor vehicles and

parts, metals, petroleum and gasoline, foods and other necessities of life made up 44% of the shipments. And the munitions class itself included a large proportion of civilian type items such as radios and telephones, merchant ships, cargo planes, construction equipment, shoes and other military clothing, and medical supplies. Lend-lease was the key which unlocked the tremendous productive capacity of the United States and interlocked the economies of the Allied nations.

Exports to Western Hemisphere.—The other arm of overseas co-operation was the trade of the United States with western hemisphere countries. This trade consisted chiefly of the supply of raw materials and foods to the arsenals and factories of the United States in return for machinery, manufactured civilian goods and some military equipment. Customary methods of financing (i.e., non-lend-lease) were adequate for the conduct of this trade because it involved a two-way exchange of goods. In fact, the United States had a considerable import balance with the American republics.

During the first two years after the outbreak of World War II, exports from the United States to the American republics increased as Latin America turned to the United States to replace supplies formerly obtained from Germany, now virtually ruled from the seas. During 1941 they totalled \$902,000,000 compared with an annual average of \$486,000,000 in 1936–38. With the entry of the United States into the war, these exports declined. Shortages of goods and shipping facilities, plus the submarine menace, were responsible. Not until 1944, when merchant ships were sliding down United States shipways at the rate of

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three or four a day and the submarine menace had been conquered did they recover their 1941 value. And this recovery was chiefly because of price increases—physical quantities were still below even their prewar levels.

In contrast, exports to Canada increased rapidly right after the start of war and continued to do so through 1943, when they were \$1,444,000,000—more than three times their prewar value. These exports were more directly related to military production and procurement than were those of Latin America. Among important products shipped were aeroplane parts and other munitions components. Some of these shipments were procured through lend-lease facilities with arrangements for reimbursement of the United States.

U.S. Imports.—On the import side, U.S. trade showed the influence of two developments: (1) the loss of supplies from axis and axis-occupied territories in Europe and later the far east; and (2) the development of alternative sources of supply in Canada, Latin America, Africa and the near east. During the two years before Pearl Harbor, the United States built up stockpiles of such critical war materials as rubber and alloy metals. The preclusive buying program also contributed to the expansion of imports. Imports from Africa and the near east were double their prewar value in 1941; those from the American republics nearly double. Shipments received from Canada increased 61%; those from the far east 58%.

The wisdom of stockpiling was proved in 1942 when, one after another, important sources of raw materials in the Southwest Pacific fell into Japanese hands. United States imports from the far east dropped to 44% of their 1941 value and continued to decline for the rest of the war. The need for shipping in the North Atlantic and the ravages of submarine warfare also held down 1942 imports from the American republics. Total U.S. imports in 1942 were only 10% above their 1936–38 average value; in physical quantities they were about 8% below prewar levels.

Imports from Canada and the American republics increased rapidly during the next two years. By 1944, these countries supplied nearly three-fourths of U.S. imports; in that year, total imports reached \$3,900,000,000—a value higher than in any year after 1929. Import prices were about 50% higher than during 1936–38. The actual volume of goods received, therefore, was only about 5% above the immediate prewar years.

Imports exceeded non-lend-lease exports in 1944 by approximately \$900,000,000, of which \$600,000,000 was accounted for by trade with the American republics. This feature of U.S. wartime trade stood in sharp contrast to the typical excess of exports in prewar trade and was a principal factor accounting for the increase in foreign holdings of dollars and gold during 1944.

The wartime trade of the United Kingdom, Canada and the American republics reflected the phenomenal growth of U.S. trade. United Kingdom imports increased 50% despite the loss of supplies normally received from axis and axis-occupied countries. Latin-American exports nearly doubled even counting in the loss of European markets. Canada's trade increased on both sides.

Wartime Trade of the United Kingdom.—The outstanding feature of British wartime trade was the drastic reduction of exports and tremendous expansion of imports. Dictated by the fortunes of war, this change was accomplished only by liquidation of foreign balances and investments and the incurrence of large foreign debts. From a leading creditor, England was converted into a debtor nation, a change which was to have a profound influence upon the

development of postwar world trade.

Throughout the five years from 1940 to 1944, British imports exceeded exports by an annual average of \$3,400,000,000—nearly twice the prewar amount. Of this total, \$2,500,000,000 was in Britain's trade with the United States, Canada and the American republics; \$900,000,000 was with other unoccupied countries. Before the war the excess of imports from western hemisphere countries, excluding British colonies, amounted to only \$960.000,000 annually. Under the circumstances, it was not difficult to understand how British resources dwindled and obligations piled up.

The declaration of war in Sept. 1939 and the subsequent axis occupation of one after another country in Europe and later Asia, cut off from a fourth to a third of England's prewar export markets. Shortages of goods and shipping facilities, and prohibitions on the export of goods made from lend-lease materials, brought exports to the American republics in 1944 down to less than a fourth of their prewar dollar value, despite higher prices. Exports to other areas such as Africa, the middle east and Oceania fared somewhat better. The United Kingdom shared with the United States the task of supplying the essential requirements of countries in these areas. Total exports reached their wartime low in 1943. In this year they were only two-fifths of their 1938 dollar value and less than one-third their prewar physical volume.

Even before the war British imports were nearly double the value of exports; in 1944 they were five times as great. The 1944 peak was 14% above the average annual dollar value from 1936–38. Measured in English pounds sterling, the increase was 40%. Since prices had risen considerably more, however, the actual volume of merchandise received was below prewar levels. Quantities of food, animal feed-stuffs and raw materials imported were curtailed by an estimated 50% as compared with prewar levels, while imports of finished goods were largely confined to munitions.

If this comparatively low level for the physical volume of United Kingdom imports seemed a disappointing achievement in view of the herculean export efforts of the United States, Canada, the Latin-American republics and other countries, two things should be remembered. First, the battle of the Atlantic was extremely costly. Submarine losses, not included in the British statistics, were large, especially in 1942 and early 1943. Second, Britain's chief prewar import sources were cut off by the war. In 1936-38, the United States, Canada and the American republics together supplied only 30% of the United Kingdom's imports. By 1943 these countries combined supplied 69% of the total; in 1944, 67%. This tremendous shift was possible only because of U.S. lend-lease, Canadian mutual aid and the acceptance of sterling credits by Latin-American republics.

Canada's Wartime Trade.—Canadian exports rose almost on a par with those of the United States. In 1944 they were \$3,100,000,000—almost four times their 1936—38 average. In comparison, the value of U.S. exports increased nearly fivefold. Like the United States, Canada made heavy shipments overseas, especially to the United Kingdom, as a part of the mutual aid arrangements among the United Nations. Nearly a third of Canada's wartime exports were financed by loans and grants in aid. In 1942, sterling balances accumulated by Canada during the early war years were funded by a loan of \$700,000,000 to the United Kingdom. An outright gift (mutual aid) of \$1,000,000,000 for financing exports to the United Kingdom was

made in the same year. During 1943-44 this was followed by appropriations for mutual aid amounting to \$1,800,000,000.

Early in 1942, however, the United States took over the United Kingdom's prewar position as Canada's number one customer; it continued to hold this spot after the war. Between them, these two countries alone took three-fourths of Canadian exports in 1944, the same as the prewar proportion.

Imports into Canada were at a record level in 1942. In subsequent years the increase was slight. The 1944 peak of \$1,585,000,000 was two and one-half times the prewar level. A fair estimate of the interim price increase was 45%. On this basis, the physical quantity of imports could be estimated at 70% above prewar levels. Practically all of the increase, and indeed 82% of the total, constituted shipments from the United States. These included some lend-lease deliveries for other than Canadian account, such as components of munitions eventually going to the United Kingdom.

Latin-American Republics.—The chief developments in the wartime trade of the American republics were the increase in their exports to the United States and the rapid growth of their trade with each other. These factors brought total exports to \$2,960,000,000 in 1944—an increase of 72% over 1938. Exports to the United States tripled; trade among the republics increased almost five times. Shipments to the United Kingdom also rose more than 60% in value. Continental European markets were largely cut off throughout the war.

The American republics helped to replace sources of critical raw materials cut off by the war. Among important war materials shipped were copper, nitrates, rubber, tin, mica, sisal and henequen, hides and skins, industrial diamonds and vegetable oils. In the food class, sugar, coffee, meat and grains were important.

By mutual agreement of the United Nations, the United States undertook to supply the import requirements of the Latin-American republics after Pearl Harbor. Latin-American imports from the United States had already expanded in 1940 and 1941 to replace those cut off from Germany and to a lesser extent the United Kingdom. Shortages of goods in the United States and lack of shipping space, however, combined with submarine losses to hold down imports during 1942. Not until 1944 did total imports of the American republics show any noticeable increase over their prewar value. In this year, imports from the United States surpassed their 1941 value for the first time and were more than double their 1938 value. However, total imports were only 30% above the 1938 value, so the quantity of merchandise received was still considerably below prewar levels. Indeed, if imports from other American republics were eliminated, imports from the rest of the world were only 4% above their prewar value.

Whenever possible, the United States attempted to provide machinery and equipment for the expansion of production of raw materials and even manufactures in critically short supply. The success of this program was indicated by the expansion of exports of raw materials to the United States and the development of an exchange of manufactured goods for raw materials among the American republics themselves. In 1944, the export-import trade between the American republics totalled nearly \$1,000,000,000.

Because of the necessity of going without imported goods,

the gold and foreign exchange holdings of the Latin-American countries increased throughout the war. At the end of 1944 they were an estimated \$3,500,000,000. The excess of exports over imports in trade with the United States accounted for a large part of this balance; sterling balances likewise increased. Import controls were instituted by most of the republics to insure the desired distribution of the limited supply of goods available. Export controls were also adopted to prevent direct and indirect shipments to axis nations.

Transition

Events of momentous importance to the flow of international trade followed each other in rapid succession throughout 1945. At the year's outset the Allies were successfully blunting, then breaking the desperate German counteroffensive in the Ardennes. The gradual crumbling of the German armies followed, with complete capitulation of Germany on May 7. Three months later, Japan joined its two accomplices in unconditional surrender. At the year's end, however, several important trading areas still remained closed to the free flow of trade. Axis countries, of course, continued under Allied army occupation and were prohibited from engaging in foreign trade. Open fighting or an armed state of truce existed in several other areas. In many war-devastated regions transportation, communication and harbour facilities remained inadequate and production was still far below prewar levels.

During the first half of 1945, trade between the Allies continued much as it had in previous war years. Shipments of military equipment continued to decline as they had in the last half of 1944 after completion of preparations for D-day. The reopening of trade between liberated countries on the continent and the United Kingdom and western hemisphere countries was the chief new development. V-J day changed all this. Strenuous efforts by all countries to reconvert their foreign trade as well as their domestic production to peacetime channels characterized developments during the last half of 1945.

Table VI.—Reaction of World Trade to War's Termination

Country																	Percent of M	945 Trade as onthly Average June 1945
																	Exports	Import:
Argentina .	•																162	150
Australia .	٠		•	٠	٠				٠		٠		•				101	99
Belgium .	•			•	٠								٠				555	393
Brazil																	143	84
British India					٠	٠											133	94
Canada .	٠																78	97
Chile																	125	110
Denmark .															_		156	192
Eire																	130	109
France													-	-	-		313	484
Mexico													-	•		•	116	118
Norway .						-		÷	Ī	-	Ĭ	•	Ť	•	•		104	317
Peru		-						Ī	•	•	•	•	•	•	•	•	68	121
Sweden .																	251	245
Switzerland	-	Ī	•	Ī	Ī	•	•	•	•	•	٠	٠	•	•	٠	•	137	
United Kingo	ň	m.	•	٠	•	•	٠	•	٠	٠	•	•	٠	•	•	٠		278
United State			•	٠	•	•	•	٠	٠	٠	•	٠	•	•	•	•	124	75
Including I		4.1	مما														40	
Excluding	L	- 4	L	~~													.49	96
Source Fo													•				127	

The wartime trends in the exports and imports of the various countries described above were quickly reversed (Table VI). The termination of lend-lease on Aug. 21, 1945, signalized a decline of imports for many countries and a reduction of exports for the United States. U.S. imports declined too, as the need for raw materials diminished. By Nov. the contraction of U.S. exports resulting from the termination of lend-lease was nearly completed. Shipments of munitions were nearly down to normal peacetime levels. Although exports which were technically classified as "lend-lease" continued on a small scale, they represented transitional operations in the course of draining

"pipe lines." Increased U.N.R.R.A. and private relief shipments and an expansion of commercial trade brought exports to a total well above the Oct. low.

Canadian exports reached their low in Sept. 1945. Seasonal factors, particularly the fall grain shipments, arrested any further decline until after the end of the year. During the war Canada was the world's second ranking exporter. With winter's reversal of the fall seasonal trend, it relinquished this spot to Britain. Canadian imports remained relatively steady throughout 1945 at around \$120,000,000. After V-J day, imports from the United States declined slightly; those from the United Kingdom increased.

Imports of the United Kingdom reacted immediately to the termination of lend-lease. It was the only one of 24 countries for which Sept. 1945 data were available which showed a noticeable decline of imports. Aug. imports were nearly \$500,000,000; two months later, imports were below \$300,000,000. Soon after V-E day, imports of manufactures and munitions were curtailed; termination of lend-lease brought a reduction in imports of food as well.

Britain's export trade fared better. Shipments increased irregularly from V-E day until the end of the year. Shipments to all areas increased, especially those to continental Europe and Latin America. Not until the first quarter of 1946, however, did the postwar export drive really get under way.

Immediately after V-E day, an upsurge occurred in the trade of the 20 American republics. Exports increased rapidly, owing to the temporary easing of the shipping situation and the continued requirements of the United States for war materials. With the capitulation of Japan, munitions production in the United States declined sharply and reduced the need for raw material imports from Latin America. The reopening of trade with continental Europe, however, provided offsetting exports. Exports to the United Kingdom also increased.

After V-J day, exports were relatively stable at around \$320,000,000 per month for the balance of the year. The cessation of hostilities gave businessmen in the United States, the United Kingdom and Canada more opportunity to give attention to the needs of their Latin-American customers. Flush with cash balances accumulated during the war, and eager to buy manufactured consumers goods and industrial machinery for replacement and expansion, the American republics led other countries in the growth of their imports.

To the "big three" of world trade (United States, United Kingdom and Canada), Latin America represented a major postwar source of raw materials and foods and an important market for manufactures. Postwar developments in the relative status of these three countries in the trade

Table VII.—V-J Day's Effect on Latin-American Trade: Argentina, Brazil and Chile (Quarterly rates in millions of U.S. dollars)

ABC Exports to:	Jan. to June 1945	July to Sept. 1945	Oct. to Dec. 1945
•	1440		
United States	146.2	204.0	171.2
Canada	.7	3.1	2.8
United Kingdom	62.0	73.0	84.7
Belgium	2.2	11.9	11.4
France	1.6	9.8	17.8
Italy	.1	1.0	4.4
Other American republics	93.6	109.3	111.5
Other countries	43.6	81.9	106.1
	350.0		
Total ABC exports	330.0	494.0	509.9
ABC Imports from:			•
United States	83.2	90.4	91.8
Canada	3.4	4.7	4.3
United Kingdom	12.2	14.5	17.4
	77.2	67.2	77.1
Other American republics			
Other countries	28.3	55.8	60.4
Total ABC imports	204.3	232.6	251.0
Source: World Trade, U.S. Department of C	ommerce		

of this area could best be observed in the statistics of the American republics themselves. In Table VII, the exports and imports of three of the leading countries combined—Brazil, Argentina and Chile—are shown for the year 1945. Reconversion was characterized by a rapid growth of trade with the United Kingdom and continental Europe, although the United States maintained an overwhelmingly dominant position.

Only continental European countries surpassed Latin-American republics in the percentage growth of their trade after V-J day. This was because continental trade was just making a beginning during the first half of 1945. Trade of liberated and neutral countries alike rose rapidly; increases ranged from two- to tenfold between the first and last quarters of 1945. Food and raw material shipments were largely responsible.

Extent of Recovery in 1945.—By the end of 1945, world exports of 20 countries were proceeding at a monthly rate of \$1,600,000,000—a recovery of 30% from the Sept. reconversion low. Prewar exports of these countries were \$1,000,000,000 per month. Since dollar prices in world export markets at this time were from 50% to 55% higher than during 1936–38, even the physical movement of goods was somewhat above prewar levels.

Total world trade had not recovered by any such magnitude, however, since such prewar leaders as Germany and Japan were excluded from the 20 countries. For the world as a whole, the dollar value of trade in Dec. 1945 was about equal to the 1936–38 monthly average; the volume was estimated to be 70% of that in prewar years. The gigantic problems ahead in relief and the reconstruction of world trade were evidenced by the concentration of existing trade among the United States, the United Kingdom, Canada and the Latin-American republics. In the fourth quarter of 1945, the export-import trade of these countries with each other was double its quarterly value in the years 1936–38. Even with allowance for price increases, shipments were considerably above prewar levels, in sharp contrast to the trade of the rest of the world.

Postwar Problems.—The postwar reconstruction of world trade was complicated by a formidable number of interrelated problems. Many of these were not a direct heritage of the war, although the war emphasized the necessity for their prompt solution. Among these problems were relief, rehabilitation and reconstruction in war-devastated areas; the disposal of war equipment and property; settlement of war debts and reparations; the economic future of Germany and Japan in relation to foreign trade; the spread of industrialization to newly developed and "backward" countries; relaxation of trade controls established before and during the war, or, if these were to be retained by some countries, the development of amicable trade with controls; the establishment of an international currency, or at least of stable exchange rates; the development of a mechanism to provide sound international investment; and the ever-present fear of cyclical fluctuations with their danger of world-wide depression.

The most immediately urgent problem was relief and rehabilitation. The United Nations Relief and Rehabilitation administration was formed to assist those liberated countries which requested aid because they lacked sufficient foreign exchange to finance importations of this kind. Contributions pledged were based upon relative sizes of national income. By Nov. 1946 a total of \$3,681,000,000 was made available. Most U.N.R.R.A. shipments were to eastern and southern European countries and to China. Pri-

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vate relief agencies also made shipments to these and to other countries. The size and composition of U.N.R.R.A. shipments are shown in Tables VIII to X. (See also UNITED NATIONS RELIEF AND REHABILITATION ADMINISTRATION.)

Table VIII.—Operating Contributions Made Available by Member Governments to U.N R.R.A Cumulative through Sept. 1946 (In millions of U.S. dollars)

		٠,	••				v.	٠.	·- ·	2011212)	
Country										Contribution*	Percent of Total
United States										2,686 5	73.7
United Kingdom											17.0
Canada										137.7	3.5
Australia					٠					76.3	2.1
Brazil										39.5	1.1
India										22.7	6 .5
Union of South Africa										1 7.8 16.9	.5 .5
New Zealand										29.2	1.0
Other										3.646.2	100.0
10101	 •	•	٠	•	•	٠	•	٠	•	3,040.2	100.0

*An additional \$14,884,000 was in process of being made available Contributions for administrative expenses not listed here amounted to \$30,750,000.

Source: Report of the director general (U.N.R.R.A.) to the council.

Table IX.—Total U.N R.R.A. Shipments March 1945 to Sept. 1946 (Millions of gross long tons)

Quarter and Year									Quarterly	Cumulative
1945-2nd quarter								•	1.1	1.1
3rd quarter										2 2
4th quarter										4.0 8.3
1946—1st quarter 2nd quarter										12.3
3rd quarter										16.7

Table X —UN R.R.A Shipments by Commodity and Country of Destination Through Sept 1946 (In millions of U.S. dollars)

Country of Destination	Total	Food	Clothing*	Rehabili- tation†	Other
Poland	 383	159	8.4	126	14
Yugoslavia	 337	132	69	91	45
Greece	 310	168	34	58	5 0
Italy	248	151	33	58	6
China	 227	93	58	66	10
Czechoslovakia	 208	107	28	65	8
Ukrainian S.S.R	 150	92	15	42	1
Austria	 85	42	1	15	27
Byelorussian S.S.R	 46	28	6	12	0
Other	51	14	23	0	14
All countries	 2.045	986	351	533	175

*Includes raw cotton and wool, yarns and fabrics, and leather.

†Includes seeds, fertilizer, farm machinery, coal and industrial machinery and equipment.

Source: Report of the director general (U.N.R.R.A.) to the council

With respect to the relaxation of foreign trade controls, the Allies had widely divergent points of view. In part, these differences were based upon their diverse internal economic organizations. The United States wished to relax controls as rapidly as possible, and in fact did so soon after V-J day on all but a limited list of items in short supply. In contrast, the U.S.S.R. expected to continue its prewar government monopoly of foreign trade. Between these two extremes were the United Kingdom and most European countries, which wished to maintain both import and export controls and to conduct trade through government purchasing missions. In part these desires were based upon shortages of goods and unfavourable balances of payments. Many Latin-American countries also continued their wartime foreign trade controls.

The cancellation of any obligation to pay for most of the shipments received by Great Britain under lend-lease represented a forward-looking step in the settlement of war debts. Similar agreements were expected for the other chief recipients of lend-lease aid. Britain continued to owe large balances to its colonies, the dominions and South American countries. These were due in sterling and, by mutual understanding, could not be converted to other currencies. In effect, therefore, payment had to be accepted in terms of British goods. The liquidation of foreign investments early in the war further aggravated Britain's

balance of payments situation.

The British-U.S. loan agreement, proposals for which were first announced in Dec. 1945, was a major step in the United States drive to restore postwar international trade on a laissez-faire basis. With this financial aid, it was believed the United Kingdom would be enabled to join the United States in promoting various proposals such as the stabilization of exchange rates, the reduction of tariffs and the re-establishment of foreign investment on a sound basis. The proposed agreement provided for the authorization of new loans to the British government up to \$3,750,000,000 plus \$618,000,000 for funding of all British obligations under lend-lease. Liberal terms of repayment were established. In return, the United Kıngdom agreed to eliminate the practice of pooling dollar exchange and to allow other countries to convert their sterling balances into dollar exchange. It also subscribed to the objective of private trade under reduced tariff barriers and agreed to co-operate in the promotion of a world conference on international trade organization.

The Bretton Woods monetary agreements were formally signed shortly thereafter by 29 of the 44 nations which had drafted them in the summer of 1944. The International Monetary Fund (q.v.) was established to promote the stabilization of exchange rates, a necessary condition to the conduct of international trade on a private trading basis. The International Bank for Reconstruction and Development (q.v.) was formed to provide for long-term investment operations between countries. It was hoped that private banks and individuals might ultimately be induced to make foreign investments either directly or through the purchase of securities floated through the World bank. In the interval between the termination of lend-lease and the start of operations by the World bank, the U.S. Export-Import bank (q.v.) was the chief agency financing international investment.

The effects of the war upon patterns of international specialization and industrialization were a major problem confronting the World bank. Before the war, western European countries such as Belgium, Czechoslovakia, France, Germany, Italy, Sweden and Switzerland were among the leading industrial workshops of the world. Their imports were chiefly of foods and raw materials, their exports mainly manufactured goods. Germany led them all, exporting industrial machinery and equipment and manufactured consumer goods to them as well as to other less industrialized countries in Europe and elsewhere. Japan held a similar position in the far east.

The replacement of war-damaged productive facilities in the liberated countries was thus only part of the problem of the reconstruction of world trade. Some replacement had to be found for the former reliance placed upon Germany and Japan for industrial equipment and manufactured consumer goods by other countries. New channels had to be developed for the prewar flow of raw materials and food.

The trend toward industrialization in previously undeveloped countries was also a factor in the reconstruction of postwar world trade patterns. Some diversification of production was regarded as necessary by many of these countries to avoid the inherent economic instability involved in specialization in the production of raw materials or food.

Proposals for a conference of all nations to establish an International Trade organization were first announced by the United States on Dec. 6, 1945. In Feb. 1946 the economic and social council of the United Nations, at its first meeting, adopted a resolution calling for a similar

conference. A preparatory committee of 19 countries was established which met in London in the fall of 1946 to arrange for the conference and prepare a draft charter. Meanwhile the United States continued with negotiations for revisions of its reciprocal trade treaties with a general view to lowering tariff barriers. (See U.S. Trade Agreements, below.)

The fear of postwar depression and unemployment, and the desire of governments to be free to adopt such measures as appeared expedient to combat them, were important hurdles to the adoption of agreements concerning international trade. There was general agreement that the success of an international trade organization would require consideration of employment as well as trade policies.

Considerable experience was gained during the war with international agencies designed to solve economic and production problems. How much of this experience and the framework developed would prove useful under peacetime conditions was uncertain. Prospects appeared most promising in the field of agricultural production. The Food and Agricultural organization was established at the Quebec conference in Oct. 1945 as an outgrowth of the Combined Food board. At its meeting in Copenhagen, Denmark, in Sept. 1946 a World Food board was formed to deal with surplus and deficit food production problems. Among prewar agencies of this kind was the International Labour organization (q.v.).

Active 1946.—Although many problems of postwar economic organization remained unresolved, the first half of 1946 was a period of unusual activity in world trade. Relief shipments of food and clothing to war-devastated areas were at their peak. In late spring, evidence of another stage in the postwar development of trade—reconstruction—began to appear. Shipments of agricultural and industrial machinery, construction equipment, vehicles and manufactured consumers goods increased in importance as reconversion to civilian production gained headway in the United States and the United Kingdom.

During the first quarter, exports of the 20 countries were steady at about their Dec. 1945 level. Seasonal factors were partly responsible for the levelling off of trade. Canadian exports showed their regular winter decline resulting from the closing of shipping on the Great Lakes. Shipping in Swedish harbours also was affected by winter weather. U.S. exports began to level off, although their prewar tendency to decline in the winter months was not in evidence except in February. These declines were offset by increases in the exports of the United Kingdom and liberated countries in Europe.

The upward trend was renewed in April and May. Exports of the 20 countries in the second quarter rose to 16% above the first quarter level and to nearly double their prewar monthly value. Part of the rise could probably be attributed to further increases in export prices. Seasonal factors also contributed. Ratios to the dollar for the various currencies of the countries involved remained unchanged during the period, so the rise was not due to changes in conversion factors. The world-wide scope of the April-May increases was indicated by the fact that exports increased in all but 2 of the 20 countries.

Exports, the Yardstick.—Conditions in world markets during the first six months of 1946 were quite different from those in 1936–38. Markets were "sellers'" markets. The efforts of most nations were aimed at obtaining imports. Import controls were designed to secure the most possible in return for the limited available foreign exchange. Many nations maintained restrictions on exports also to conserve limited supplies for urgent domestic needs.

Hence the significance of exports and imports differed between countries in this period.

Nevertheless, many of the export-import regulations and controls were intended to speed up and strengthen ultimate entry into world markets as suppliers. Thus, one measure of the progress of reconversion and industrial rehabilitation in various countries was the rate of increase in their contribution to the volume of world trade on the export side. Movements of imports of the 20 countries combined were similar to those of their exports. Imports of liberated countries ranged up to four or five times exports. The United Kingdom also had an import balance. These import balances were provided by net exports from the United States, Canada and the Latin-American republics.

Postwar Leaders.—The United States, the United Kingdom and Canada emerged from World War II as undisputed leaders of world trade. Their combined exports during the first half of 1946 were 2.30 times the combined exports of the 17 other countries for which estimates were available. On the import side the ratio was somewhat lower—1.60 times. Before the war the ratio of exports for the same countries had been only 1.19 to 1; of imports, 1.23 to 1. Among the 17 other countries were such prewar leaders as France, Belgium, Australia, Argentina, Sweden, Switzerland and Brazil. The postwar dominance of the "big three" would be even more striking were Germany and Japan included in these ratios.

On the export side the gain in relative importance was due to an actual expansion of exports as well as to the fact that exports of war-devastated countries declined Exports of the "big three" were more than double their 1936–38 rates despite the virtual elimination of their trade with Germany and Japan. An estimated 55% of this increase was due to higher prices. The physical volume of exports was about 46% higher. In contrast, the value of exports by the 17 other countries was approximately equal to the prewar average. Gains in the exports of Latin-American and other countries were offset by decreases for war-torn areas.

Although the "big three" also dominated import markets, the postwar expansion of their imports was much smaller—about 41%. Thus the index of the physical quantity of their imports was still somewhat below prewar levels. The destruction of productive capacity in the countries occupied during the war naturally retarded the recovery of imports from this group into the United States, the United Kingdom and Canada.

The gains in trade between the "big three" themselves were an important factor contributing to the postwar increase in their export-import trade. Most of this growth was in the exchange of goods between Canada and the United States. A second factor was the growth of their trade with Latin-American countries. During the first quarter of 1946, for example, exports to the American republics were three times their 1936-38 quarterly average; imports about two and one-fourth times. Germany was no longer a competitor. The restoration of trade with countries formerly occupied by the axis nations had its chief influence on the exports of the United States, the United Kingdom and Canada throughout the first six months of 1946. In the first quarter, exports of the "big three" to a group of 25 such countries located in Europe and the far east amounted to \$1,041,000,000 or about three times their prewar average. Of this total, the United States supplied \$774,000,000 as compared with \$148,000,000 before the war. Lend-lease and U.N.R.R.A. shipments from the 720 United States amounted to \$391,200,000; private relief shipments to \$19,500,000.

Several new names appeared in the postwar line-up of the world's ten top traders (Table XI). The United States took over first place in total trade from the United King-

Table_XI.—Postwar Leaders of World Trade First Half Year 1946 (values in millions of U.S. dollars)

Country		Total	Exports	Imports
United States:				
Total		 6,870	4,635	2,235
Excluding U.N.R.R.A	, and lend-leas	 5.710	3.475	2.235
United Kingdom		 4,220	1.785	2.435
Canada		 1,766	973	793
France		 1,175	283	892
British India		 *	*	*
Brazil		720	437	283
Argentina		 682	443	239
Switzerland		649	268	381
Australia†		 655	355	300
		680	246	434
Sweden		 635	280	355

^{*}Figures not available, but the probable rank is indicated by the listing. †June estimated.

Source of data: World Trade Review, U.S. Department of Commerce

dom. Imports of the United States rose to record levels and nearly matched those of the United Kingdom. As before the war, United States exports far exceeded those of Britain. Germany and Japan dropped out and Canada moved up to third place. On the export side, all liberated European countries were eliminated from the picture to be replaced by South American countries and British India. Brazil surpassed Argentina to take fourth place. Switzerland and Sweden also moved up on the list. On the import side, France led Canada to place third. Somewhat further behind were British India, Belgium, Switzerland and Sweden. To provide comparisons with prewar levels of trade and to facilitate approximate allowances for price increases, postwar values are shown as percentages of the prewar values in Table XII.

Table XII.—Prewar and Postwar Levels of Trade First Half Year 1946 (1936-38 average values for six months=100)

		٠,	
Country	Total	Exports	Imports
United States:		•	,
Total	255	317	181
Excluding U.N.R.R.A. and lend-lease	212	238	181
United Kingdom	116	133	106
Canada	218	211	228
France Brazil	95	61	117
Argenting	242	274	204
Switzerland	136 193	155	112
Australia	130	186 131	198
Belgium	86	65	128 106
Sweden	135	124	100

Source of data: World Trade Review, U.S. Department of Commerce

Britain's Program.—One of the outstanding developments of postwar trade was the achievement of the British in the reconstruction of their postwar exports. The efforts of the British government and industry to readjust Britain's foreign trade position to one more nearly in accord with that of a debtor nation were bearing fruit. During the war the United Kingdom concentrated on munitions production and cut exports drastically. Imports increased, especially of lend-lease munitions from the United States. But after V-E-day, exports of manufactured goods increased; imports of manufactures and munitions were curtailed, and raw materials increased. As a result the balance of merchandise trade improved rapidly.

A postwar export target of a 75% increase over prewar exports was established. Assistance in obtaining raw materials and labour were extended to the export industries. Allocations of domestic production between home and foreign markets were set up. After a series of alternate ups and downs during the last half of 1945, exports began to climb steadily until in July 1946 they reached \$388,400,

ooo, only 0.7% short of the goal. Since prices had risen by somewhat the same proportion, however, it was probable that the physical volume of trade was only slightly above prewar levels.

Imports also rose somewhat above the Oct. low established with the termination of lend-lease. The rise was partly because of the necessity for imports of raw materials and foods in order to get production in the export industries under way. The net excess of imports over exports continued a third lower than prewar values. For the first six months of 1946 it was \$650,000,000. With the ratification of the U.S.-British loan agreements (July 15, 1946) the foreign trade problems of the United Kingdom appeared well on the way to a solution.

Liberated Countries.—Although generally still well below prewar levels, the growth of exports from liberated countries in Europe and Asia was encouraging. Shipments from Norway and Denmark nearly equalled prewar values. In western Europe, exports of France and Belgium were more than 60% of prewar values during the first six months. Those of other countries were somewhat lower. However, it was the rate of increase rather than the level which was promising. In April, for example, total exports of six formerly occupied European countries were double their value in Dec. 1945 and four times their value eight months earlier in Aug. 1945.

Although direct data on total exports of liberated countries in eastern Europe and Asia were not available, data on the imports of the "big three" from these countries gave an indirect yardstick of their exports. Imports of the "big three" from both eastern Europe and liberated Asia were very nearly at a standstill in the third quarter of 1945—only \$8,000,000. During the first three months of 1946, they reached \$72,000,000—31% of the 1936—38 quarterly average value. The ratio for eastern Europe alone, however, was only 18%, whereas that for the far east was 37%.

For all these countries (except Czechoslovakia), imports far exceeded exports. In eastern Europe this was made possible by U.N.R.R.A. shipments, supplied chiefly by the United States. During the first quarter of 1946 the United States also supplied 86% of the shipments by the "big three" to liberated Asia. About one-fifth of these were U.N.R.R.A., lend-lease or private relief. Western European countries were not eligible for U.N.R.R.A. aid because they possessed some foreign exchange balances. Loans such as those from the U.S. Export-Import bank helped. Nevertheless, it seemed probable that the meagre foreign exchange balances these countries did possess at the end of the war were being rapidly depleted.

Recovery.-At the end of 1946, the over-all world trade picture appeared favourable. Trade between countries in the western hemisphere was at a new all-time high even with allowance for price increases. The United Kingdom was making a spectacular comeback. Exports of formerly occupied countries were small but growing rapidly. The types of products traded gave further proof of progress in the re-establishment of world trade. Foodstuffs were important, not only because of the famine situation, but also because of their normally important role in international trade. Shipments of raw materials such as cotton, wool and coal were also at high levels. Even in fields which faced difficult reconversion problems after the war, considerable recovery had been made. Many types of machinery and equipment were being shipped in larger quantities than before the war. New products such as penicillin, synthetic rubber and synthetic textiles had been added to the list of products entering into world trade.

There were a few question marks, of course. The future of Germany and Japan was one of them. The trend toward industrialization in many agricultural and raw material producing countries was another. Experience after World War I cautioned that surplus problems might arise in some foods when production on the European continent was restored. However, an over-all increase in productive capacity and trade potentials appeared a probable ultimate result of the war. The economic desirability of international specialization and trade continued undiminished. Mechanisms of trade which would permit the continuance and growth of the international flow of goods between diverse economic systems were in process of evolution. A favourable political environment for the growth of world trade remained to be achieved. (P. Ws.)

U.S. Trade Agreements.—During the late 1920s and early 1930s various types of trade controls aimed at restricting imports were drastically increased, and new ones were instituted by practically all nations. At the same time various governmental measures to enlarge exports, such as direct and hidden export subsidies, were adopted. Such programs disregarded the fact that in order to sell its products in world markets, a nation must also buy in those markets; that a nation must use the two-way street of international trade in both directions because, in the long run, exports can be paid for only in imports and services.

Passage of the U.S. Tariff act of 1930 raised tariff rates on U.S. imports to unprecedentedly high levels and thus contributed substantially to the building of higher and higher world trade barriers. Collapse of U.S. foreign trade soon followed; imports dropped 70% from \$4.400,000,000 in 1929 to \$1,300,000,000 in 1932, while exports dropped 69% from \$5,200,000,000 in 1929 to \$1,600,000,000 in 1932.

69% from \$5,200,000,000 in 1929 to \$1,600,000,000 in 1932. For the purpose of reviving U.S. foreign trade and expanding export outlets for U.S. farm and factory products and of raising the level of employment and standard of living, congress on June 12, 1934, passed the Trade Agreements act, authorizing the president to conclude trade agreements with foreign countries for reciprocal reduction and elimination of trade barriers. Thereafter the United States actively pursued a program looking toward the objectives of the act.

By the beginning of the 10-year period 1937–46 the United States had concluded reciprocal trade agreements with 15 countries. During the decade under review, agreements were signed with an additional 13 countries, or 28 in all. In the order of signature agreements were concluded with the following countries; Cuba, Brazil, Belgium, Luxembourg, Haiti, Sweden, Colombia, Canada, Honduras, the Netherlands, Switzerland, Nicaragua, Guatemala, France, Finland, Costa Rica, El Salvador, Czechoslovakia, Ecuador, United Kingdom, Turkey, Venezuela, Argentina, Peru, Uruguay, Mexico, Iran and Iceland.

The authority of the president under the original Trade Agreements act was conferred for a three-year term from June 12, 1934. Congress renewed that authority four times; for three-year periods in 1937 and 1940, for a two-year period in 1943 and for a three-year period in 1945. Under the act as passed in 1934 and as renewed in 1937, 1940 and 1943, the president had authority to modify rates of duty by 50% of the rates in effect when the act was originally passed. In the 1945 renewal and amendment of the act he was given authority to modify rates of duty by 50% of those in effect on Jan. 1, 1945.

Under the reciprocal trade agreements program important progress was made in reducing and eliminating barriers to international commerce. By 1946, the United States had obtained foreign concessions on U.S.

export products which accounted for 34% of total U.S. exports on the basis of 1937 export values, comprising 48% of total U.S. agricultural and 29% of nonagricultural exports.

In the agreements the United States had reduced 1,190 rates of import duties and had given assurances against increase of 62 existing rates. Duty-free entry of products under 120 tariff paragraphs was guaranteed against change. Under the traditional most-favoured-nation policy of the United States, rates fixed in an agreement with any country applied to the same or like products from any other country (except Cuba)² which had not been following trade policies or practices likely to defeat the purposes of the program.

U.S. exports to countries with which trade agreements were in effect during all or most of 1938-39 increased 63% compared to 1934-35, while exports to non-agreement countries increased only 32%.

During World War II practically all nations were compelled to regulate their trade so as to make maximum utilization of commodities and shipping facilities for the successful prosecution of the war. When the war ended, the United States took the leadership of the United Nations in a concerted action to reduce trade barriers and eliminate trade discriminations, to open world markets and to give equal access to the raw materials of the world to all peace-loving nations.

The United States invited all the United Nations to the conference which culminated in the Bretton Woods agreement, establishing the International Monetary Fund (q.v.) to stabilize international exchanges and prevent violent fluctuations in international currencies, and setting up the International Bank for Reconstruction and Development (q.v.) to assist nations in restoration work and start their wheels of production moving.

In Dec. 1945 the United States issued its Proposals for Expansion of World Trade and Employment. These Proposals were sent to other nations as a basis for discussion at a suggested international conference on world trade and employment. Such a conference was later called by the economic and social council of the United Nations.

Following the issuance of its *Proposals*, the United States invited 15 countries to participate in a preliminary meeting to negotiate reduction and elimination of trade barriers. The 15 countries were: Australia, Belgium, Brazil, Canada, China, Cuba, Czechoslovakia, France, India, Luxembourg, the Netherlands, New Zealand, the United Kingdom, the Union of Soviet Socialist Republics and the Union of South Africa.

These and like concerted international actions were designed to expand foreign trade, increase employment and enhance the economic level of all people, thus to increase the prosperity of the world, and to promote world peace and security. (See also Business Review; Exchange Control and Exchange Rates; Law; Lend-Lease; Tariffs.)

(W. L. C.)

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^{*}The Commercial convention of 1902 with Cuba extended in the trade agreement with that country provided for preferential tariffs on Cuban products. All agreements with other countries provided for exceptions permitting this preference.

partment of State; Clarence Peters, International Trade: Cooperative or Competitive? (1946).

International Trade Organization

See International Trade; Tariffs; United Nations.

Interparliamentary Union

See International Organizations.

Interstate Commerce Commission

The Interstate Commerce commission, created by the Act to Regulate Commerce, Feb. 4, 1887, and the oldest of the United States regulatory commissions, observed its 50th anniversary on March 31, 1937. Its jurisdiction, originally confined to common carriers engaged in interstate commerce wholly by railroad or partly by railroad and partly by water, had been extended to other means of transportation, and its duties had been greatly increased by numerous amendments to the original act and by various supplementary enactments. The regulatory statute, known as the Interstate Commerce act, in its 1946 form consisted of four parts:

Part I. The jurisdiction of the commission under this part applying to:

- (a) Common carriers engaged in the transportation of passengers or property wholly by railroad, or partly by railroad and partly by water when both used under a common control, management, or arrangement, for a continuous carriage or shipment.
- (b) Common carriers engaged in the transportation of oil or other commodity, except water and except natural or artificial gas, by pipe line, or partly by pipe line and partly by railroad or by water.

(c) Express companies and sleeping car companies.

Part II. This part (added Aug. 9, 1935) as amended Sept. 18, 1940, provided for the regulation of the transportation of passengers or property by motor carriers in interstate commerce.

Part III. The provisions of this part (added Sept. 18, 1940) applied to the regulation of carriers by water engaged in interstate and foreign commerce.

Part IV. This part (added May 16, 1942) provided for the regulation of freight forwarders.

Important legislative enactments after Jan. 1, 1937, which affected the duties and functions of the Interstate Commerce commission were as follows:

The commission's jurisdiction over certain phases of transportation by air was transferred to the Civil Aeronautics authority by the Civil Aeronautics act, approved June 23, 1938.

The Transportation act of 1940, approved Sept. 18, 1940, which added Part III to the Interstate Commerce act, conferred extensive jurisdiction upon the commission over carriers by water. It also contained numerous amendments to existing law which affected the work of the commission and extended its regulatory powers to cover persons furnishing cars or protective service against heat or cold for property transported in interstate commerce.

The commission's power to deal with such emergency situations as shortages of equipment, congestion of traffic or other transportation emergencies were extended to cover similar situations with respect to motor carriers by the Second War Powers act of 1942.

Rates, Fares and Charges.—During the decade 1937-46 the Interstate Commerce commission made many decisions which affected freight rates, passenger fares and charges

of the carriers subject to its jurisdiction. The following were examples of important decisions which had broad general application:

General Commodity Rate Increases, 1937 (223 I.C.C. 657), decided Oct. 19, 1937. As a result of this decision, increases in rail rates on certain heavy basic commodities were allowed.

Fifteen Percent Case, 1937–1938 (226 I.C.C. 41), decided March 8, 1938. This provided for a general 10% increase in rail freight rates with certain exceptions. The commission found that the carriers' proposal for a general 15% increase had not been justified.

Increased Pullman Fares and Charges, 1937 (227 I.C.C 644). The commission authorized a 5% increase in Pullman fares and charges except that no increase was made in charges for upper berths in sleeping cars.

Eastern Passenger Fares in Coaches (227 I.C.C. 685). decided July 5, 1938, permitted railways in the east to raise coach fares from 2 to 2½ cents per mile for an experimental period of 18 months from July 26, 1938. Effective March 24, 1940, the maximum coach fare in the east was reduced to 2 cents per mile (237 I.C.C. 271).

Ex Parte 148—Increased Railway Rates, Fares and Charges, 1942 (248 I.C.C. 545), decided March 2, 1942. In its report in this case the commission found that the carriers' proposal for a general increase of 10% in freight rates had not been justified, but that with certain exceptions, the then existing rates might be increased by 6% and passenger fares and charges by 10%. Upon basic raw products except iron ore (no increase), coal and coke, the increase was limited to 3%. The increases allowed on coal and coke were specified amounts averaging somewhat less than 3%. Because of the relatively high earnings of the carriers as the result of war conditions, these increases, with certain exceptions, were suspended effective May 15, 1943 (255 I.C.C. 357) until Jan. 1, 1944 and were further suspended by subsequent orders of the commission. The 10% increase in passenger fares remained in effect, but the authority to increase commutation fares was revoked as of May 15, 1943.

On April 15, 1946, the railroads filed a petition with the commission for a general 25% increase in freight rates (with certain exceptions) to be made effective May 15, 1946. Common carriers by water and freight forwarders also filed petitions requesting similar increases in their rates and charges. The request was made because of falling revenues and increased costs of operation. After a hearing upon the request for an immediate increase, the commission on June 20, 1946, issued a decision in which it held that the carriers' request had not been shown to be just and reasonable as an emergency measure pending full hearings on all the proposals. Meantime the commission permitted the restoration of the emergency freight rate increases authorized on March 2, 1942, which had been under suspension, and made important additions and changes in amounts originally authorized. This resulted in an overall increase in rail freight rates of about 61/2% (Increased Railway Rates, Fares and Charges, 1942, and Increased Railway Rates, Fares and Charges, 1946). Hearings were scheduled to determine whether the carriers' proposals for larger increases were just and reasonable.

Increased Pullman Fares and Charges, 1942 (251 I.C.C. 172), decided March 9, 1942, provided for a 10% increase in Pullman fares and charges.

Class Rate Investigation, 1939 (262 I.C.C. 447). On May 15, 1945, I.C.C. issued a report and order as the result of comprehensive investigations covering class rates and freight classifications. The report contained three parts:

In Part I the commission found the railroad classifications of freight for the entire country to be unreasonable and unduly prejudicial as a whole to the extent that they were not uniform. The railroads subsequently agreed to submit for approval a uniform freight classification for the entire country. In Part II the commission prescribed a just and reasonable scale of class rates for application in connection with the uniform classification when established.

In Part III, as a temporary measure of relief from the violations of the act found in Parts I and II, the commission ordered that for an interim period until a uniform classification could be established, all class rates between southern, western trunk line and southwestern territories and between those territories on the one hand and official (eastern) territory on the other be reduced 10%. All class rates in official territory were required to be increased 10%. The commission said that this would greatly reduce the differences in the level of class rates in the various rate territories. The new rates had not become effective in 1946 because of temporary orders issued by the courts in suits instituted by certain affected parties.

Railroad Reorganization.—In the ten years 1937-46, the commission made considerable progress in completing the reorganization of railroads under the provisions of Section 77 of the Bankruptcy act. A number of large railroad companies emerged from trusteeship of the courts.

Research in Transportation.—During the decade the Interstate Commerce commission also expanded its research work and made important contributions in the field of transportation economics and statistics. The commission's Bureau of Transport Economics and Statistics rendered outstanding service during the war years in supplying government departments and various war agencies with factual data regarding transportation in the United States. In addition to regular periodic statistical reports, many special studies were released, a few of which were the following:

Railroad Sinking Funds and Funded Debt (1939)
Fluctuations in Railway Freight Traffic and Production,
1928-1941 (1942)

Freight Revenue and Value of Commodities transported on Class I Steam Railways (1943) Rail Freight Service Costs in the Various Rate Territories of

the U.S. (Published as Senate Document No. 63–1943)
A transportation cost-finding section was established in the above-mentioned bureau in 1937. This section made noteworthy progress in the development of cost of service formulas for railroads, water carriers and motor carriers and in the analysis of transportation costs for use in Interstate Commerce commission proceedings.

The Bureau of Valuation by 1946 had practically completed the valuation of pipe lines for rate-making purposes.

The commission's Bureau of Motor Carriers was organized in 1935 with appropriate sections paralleling similar sections or bureaus of the commission then in existence. Later, in the interests of administrative efficiency, several of the sections of the Motor Carrier bureau were merged with the older bureaus of the commission.

U.S. Transportation During World War II.—Upon the formal entry of the United States into World War II, President Roosevelt considered the time ripe for putting into effect a plan which had been under consideration for some time to co-ordinate the agencies and resources of the government and of the carriers with a view to meeting the wartime needs for transportation. He adopted a course which differed from that followed in World War I, during which the United States government took pos-

session and assumed control of the nation's railways. The Office of Defense Transportation was created by executive order "to collaborate with existing departments and agencies which perform functions and activities pertaining to transportation and to utilize their facilities and services to the maximum." Joseph B. Eastman, then chairman of the Interstate Commerce commission, was designated as director of the Office of Defense Transportation. He performed outstanding service in this capacity until his death on March 15, 1944. Col. J. Monroe Johnson, also a member of the Interstate Commerce commission, was chosen by the president to head the Office of Defense Transportation after Eastman's death.

In its 59th annual report to the congress the commission reviewed the remarkable performance of the nation's transportation agencies under the difficult conditions of war. With reference to the railroads it was stated that at the outbreak of war in Europe, and at times after Pearl Harbor, fears were held in some quarters that the railroads would not be able, with such aid as the government and shippers could give, to cope with the oncoming burden of war-weighted traffic. These fears were not wholly without foundation. The record showed, however, that substantially all military and essential civilian needs were met, though not without extreme effort and some tight conditions, a large measure of co-operative aid, and some inconvenience to essential civilian users.

Motor carriers, carriers by water, pipe lines, and domestic air lines also responded with a high degree of success to the varied and essential demands which the war placed upon them.

The commission's emergency powers with respect to movement of freight and passengers proved to be of utmost importance during the war period and its aftermath. Field agents of the Bureau of Service, located at strategic points throughout the country, worked in close co-operation with the Office of Defense Transportation on many transportation problems. Through the Bureaus of Safety, Locomotive Inspection and Motor Carriers the commission was actively engaged during the war years, as in peace time, in the important tasks of investigating accidents, inspecting carriers' equipment and enforcing statutes relating to safety in transportation.

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Intestinal Disorders

See Alimentary System, Disorders of.

Intoxication, Alcoholic

During the decade 1937–46, greater and greater emphasis was placed on the issue of health and welfare in relation to the problems of alcoholism. In consequence there was accumulated a more exact body of knowledge concerning its nature, under what conditions it occurs, and what measures might be applied for its amelioration.

In general, the term "intoxication" is synonymous with

the word "drunk." The latter is a plain-spoken term, direct and inclusive, and indicates a state of being poisoned by alcohol. A drunkard, however, is one who habitually drinks to excess. He may be distinguished from heavy drinkers, not so much by the quantity consumed, but by the extent that his drinking becomes a personal and a social problem for him and a detriment to the common weal. It is the latter profound effect which alcohol has on a fairly large and often otherwise useful segment of the population that constitutes the main issue of the alcohol problem. In short, when drinking becomes a personal and social problem to an individual, affecting the common life, it constitutes a social disease with medicosociological implications.

The Role of Ethyl Alcohol.-It was early taught that some distilled spirits were more toxic than others and produced a more prolonged aftereffect. This gave rise to the speculative belief that substances other than ethyl alcohol were the principal toxic factors. From a later reexamination of this subject, it became evident that ethyl alcohol is the principal and main physiologically-active ingredient of all distilled liquors.

Experimental evidence indicated that alcohol is more rapidly absorbed for the first 30 minutes after ingestion and, contrary to a former belief, the rate of absorption was found to be uniformly more rapid in those habituated to its use. Moreover, studies on the metabolism of alcohol pointed to its clustering about the liver as the chief initial site for its oxidation. Liver function and carbohydrate metabolism, in which insulin plays a role, are all immediately connected with the subject of tissue tolerance to alcohol. Metabolism of alcohol, therefore, and not the absorption rate, appeared to be the principal factor in toler-

Effects of Acute Intoxication.—There is no question that acute intoxication is a proximal cause of acute gastritis. Obviously the more-commonly related observable effects of acute intoxication deal with such matters as reduction in personal efficiency, impairments in perception and judgment, and in co-ordination of motor functions. The earliest effects, however, are observable in the emotional sphere. The emotional modifications observed in the earlier stages of intoxication include a compelling realization of one's need for personal identification with others of a group. This experience, when shared by others, tends to lessen the so-called natural constraints among people. Such sharing serves not only to promote cohesion among the group, but it enhances one's individual feeling of selfregard and personal worth.

Further modifications are characterized by an increased feeling of well being and with it, an increased confidence in one's physical and mental prowess. With secure feelings of self-esteem, self-admiration and self-appreciation goes an increase of esteem, admiration, and appreciation for others. Despite objective evidence of a progressing impairment of judgment, seen in the more intoxicated individual, there is an ever increasing appreciation of one's own brilliant conversation, intelligence and personal worth, and with it an impulse of courage in which the need no longer exists for self-restraint or for inhibiting personal actions. The nature of these emotional effects of acute intoxication is of particular interest for some students of the alcohol problem. It is of special interest to those concerned with disturbances of brain metabolism and with the role which such effect may bear as a conditioning factor in habituation.

It is a trite but true observation that alcohol makes one feel different, and, if there is a need or a desire to feel differently about one's self or the world and its people, that need or desire may be fulfilled by alcohol. Studies conducted during the decade suggested that this aspect of intoxication might be an important factor in the psychogenesis of inebriety and of the mental disorders associated with it. It was increasingly appreciated that both physiological and emotional factors were important considerations for evaluating the nature of acute intoxication from alcohol and the relationship it bore to habitual drunk-

Legal Definition .- A report by the Committee for the Study of Problems of Motor Vehicle Accidents, published in the United States in 1941, served to crystallize the controversy heretofore revolving about the proposal of the National Safety council that persons are "drunk" when the concentration of alcohol in the blood reaches 150 m.g. or more per each 100 cc. Experimental evidence indicated that such concentration was too great a criterion for drunkenness for some persons, and too little for others. The committee, however, interpreted the results of chemical tests for alcohol concentration in the blood as follows: persons with a concentration of 0.15% or more are intoxicated; those with a concentration of 0.05% or less are not under the influence of alcohol; while those showing concentrations between 0.05% and 0.15% are likely to be influenced but are considered intoxicated only when a supplemental medical examination gives objective confirmation. The value of chemical tests for concentration of alcohol in the blood was more and more recognized as admissable evidence before courts of law in the U.S., with a growing trend of increased prestige for expert testimony in this field. The diagnostic criteria cited was incorporated in a proposed "uniform" law regulating traffic on highways issued in 1945 by the office of Public Roads administration of the U.S. govern-

Methyl Alcohol Poisoning.-Methyl or wood alcohol poisoning differs from ethyl alcohol intoxication in that the former is not fully oxidized in the body but is broken down into formic acid and formaldehyde. It results in a profound acidosis and appears to have a predilection for the retina as well as other nervous tissue. It may cause acute parenchymatous degeneration of the kidneys, liver, heart and other organs. Reports indicated that a milder course of poisoning might be manifest from wood alcohol, if ethyl alcohol was consumed immediately before or after drinking it. Progress was made toward successful treatment by overcoming the acidosis produced by it.

Salient Factors in "Alcoholic Diseases."-It had long been a more or less common observation that inebriates who consumed little food were most often the subject of so-called "alcoholic diseases." Those who are regularly and well and whose assimilation was undisturbed usually escaped these diseases. Moreover, pathologists had not supplied conclusive evidence that those diseases were produced primarily by alcohol.

After 1933 a more scientific approach toward a better understanding of the problems of alcoholism revealed that nutritional factors play a fundamental role in the production of physical and mental disturbances seen among drunkards. At first this matter was oversimplified by assuming that the substitution of vitamin-free alcohol for vitamin-containing food was the sole answer. Such an assumption ignored the factor of gastrointestinal disturbances with their accompanying dietary restrictions and changes in the absorption or utilization of vitamins; of the increased secretion of water soluble vitamins or imbalances in intake of various vitamin or other accessory food needs; and of the essential increased need of vitamins consequent upon an increased carbohydrate consumption represented by the calorie values in the alcohol consumed.

It became an established fact that the polyneuritis of alcoholics, pseudo alcoholic pellagra, Karsakoff's syndrome and certain types of encephalapathia alcoholic are definitely vitamin B complex deficiency diseases. The first two are specifically the result of a vitamin B₁ or thiamin deficiency. Moreover, "beer drinker's heart," characterized by myocardial insufficiency, closely parallels cardiac changes seen in beri-beri.

In 1941 Paul György and Harry Goldblatt published the results of experimentally producing dietary liver injury in rats, consisting of necrosis and cirrhosis. Later, other experimental studies were in complete agreement that an inadequate amount of casein in the diet is the determining factor causing hepatic injury consisting of fatty infiltration and degeneration, necrosis and cirrhosis. The effect of casein was explained on the basis of a lipotropic action and it was generally thought that this was in direct proportion to its content of methionine, which was found, experimentally, to prevent dietary hepatic injury when given in adequate amounts. The weight of evidence supported the view that cirrhosis of the liver is a multiple nutritional deficiency syndrome and that alcoholism is not its primary cause. Its prevention is concerned with an adequate caloric intake consisting of a high protein, low fat diet.

Studies also showed no correlation between the incidence and severity of gastritis and the duration and degree of alcohol consumption by inebriates. However, chronic alcoholism is often accompanied by impairment in gastric secretion, achlorhydria being commonly observed. Hypochromic iron deficiency and other forms of anaemia are often associated with the achlorhydria seen among chronic drunkards. These gastric disturbances and anaemia are correlated to inadequate amounts of casein in the diet. There was no standard body of observation to support the belief that alcohol plays any causative role in the production of arteriosclerosis or nephritis. Pancreatic disturbances are not uncommon in chronic alcoholism, and the inebriate seems more susceptible to infections. The role alcoholism plays in these two situations was still a moot point in 1946. There was, however, no evidence to support the view that the abrupt withholding of alcohol plays any role in precipitating an attack of delirium tremens. The latter was not clearly understood. It is characterized however, by an imbalance in cell permeability and water metabolism; by a dimunition of alkali reserve; a vitaminosis and a liver and pancreatic disfunction. In some instances these appear to be coupled with deeply seated psychogenetic factors.

Where and When of Inebriety.—Inebriety or chronic alcoholism is not infrequently observed as a complicating factor in schizophrenia, in epilepsy, and in the manic depressive psychoses and the psychoneuroses. Studies of the personality background of these caused some observers to regard alcohol addiction as a character reaction. In general, the personality traits reported appeared to revolve about the insecurity of the individual arising from multiple experiences in the evolution and development of his personality. Outstanding features included an early mother attachment and mother dominance; father rivalry and feelings of inferiority. Other characteristics reported include day dreaming, nocturnal and religious fears, disgusts of various kinds, overt or latent homosexual trends,

over-balanced heterosexual episodes, 'somatic complaints referable to the heart or stomach, and feelings of inade-quacy in meeting the social, educational and economic aspects of life. All these were reported to disappear under the influence of alcohol.

Obviously there are a great many people whose frustrations in life remain unresolved. Outwardly they appear unwilling to accept themselves, resent their limitations, want another chance, and seem unable to compromise their difficulties and to make the most of one's best or to live gallantly and courageously in a world peopled by others. Such persons may be fertile soil for the evolution of a conditioning process toward the repetition of intoxication which causes them to feel different about themselves and about other persons. The trend of opinion during the decade 1937–46 was, however, in the general direction that no one particular personality pattern characterizes the chronic alcoholic.

Unresolved frustrations and misevaluations of life's experiences may be a contributing factor for conditioning an individual to the habitual use of alcohol. Nevertheless, the immediate or precipitating causes of acute and chronic alcoholism cannot evade consideration of the causative role played by the availability or accessibility of beverages containing alcohol. Nor can it ignore the factor of tradition or customs of the people; nor the fashions of the time. Social sanction of drink is a subtle cause of alcoholism and drunkenness, as was illustrated by the relative increase of alcoholism among women whose drinking was more readily condoned and sanctioned than formerly.

Treatment.—Earlier experiences in the treatment of inebriates, or what was then known as "the reclaiming of drunkards," was characterized by many disheartening failures and disappointments. The decade 1937-46, however, fairly well crystallized a point of view for the selection of patients who could be expected to give greater promise for successful treatment. In general, this promise was greatest among those in whom alcoholism was unassociated with a physical or mental illness, with loss of memory, or moral values and judgment, and who were personally and sincerely convinced of their defeat by alcohol.

In general the decade did not witness any newly proposed specific treatment for inebriety. It embraced the correction of faulty nutritional situations and a psychological approach by one of several methods. The latter included the application of a contraconditioning measure through the substitution of either a conditioned reflex aversion for the taste or thought of alcohol, or other substitutes or contraconditionings having greater emotional values than alcohol, including transferences to activities such as religion or hobbies and changes of occupation or of the uses of leisure time. Other psychological approaches embraced the application of hypnotism with or without drugs or the evaluation of psychogenic factors involving difficulties of the whole person. The latter approach was highly individual in character, difficult, time-consuming, and hardly economically feasible for a large number of persons with the limited trained personnel available. Group therapy was endorsed by some, and successfully used; whereas social guidance, social support, and social encouragement exemplified by Alcoholics Anonymous had great value with some limitations.

The decade witnessed a revival of a former trend toward the state's assuming greater responsibility for providing public medical and institutional facilities for inebriates, notably in the U.S.S.R., Denmark, Norway,

Sweden, Finland, Switzerland and in the United States. The states of Massachusetts and Michigan proposed new legislation, and Illinois established a special treatment centre at one of its state hospitals. Connecticut enacted more specific legislation providing for a state-wide system for study, treatment and care of alcoholics. The program, financed by revenue from liquor licences, provided for establishing diagnostic and rehabilitation centres, for conducting out-patient clinics or dispensaries, and for a centre for the commitment and segregation of intractable or confirmed inebriates.

The decade also witnessed the development of several information, diagnostic and out-patient treatment centres by voluntary agencies in the U.S. and the organization of voluntary efforts for the dissemination of information on alcohol in relation to health and welfare. A significant development was the organization of the Research Council on Problems of Alcohol which had its inception in 1937 and became an associated society of the American Association for the Advancement of Science in 1938. Also significant was the organization of the Summer School of Alcohol Studies conducted by the Laboratory of Applied Physiology of Yale university, New Haven, Conn. in 1943, and the publication of the Quarterly Journal of Studies on Alcohol, the first number of which appeared in June 1940.

In the treatment and management of delirium tremens, spinal drainage and dehydration were no longer considered desirable. Instead, fluids should be forced, and sodium chloride administered to combat dehydration and restore normal acid base equilibrium. The diet should contain high caloric and vitamin values and mechanical restraint used sparingly. The use of morphine is dangerous; paraldehyde continued to be the sedative drug of choice.

One of the significant contributions to the treatment of severe acute intoxication concerned the simultaneous administration of insulin (15 units) and glucose. These, when combined, increase the oxidation of alcohol within the body. Experiments also indicated that doses of ethyl alcohol combined with hypnotics of the barbiturate group produce not only a prolongation of the hypnotic effect but also may produce deep anaesthesia, a characteristic not observed when administered independently. (See also Liquors, Alcoholic.)

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Inventions

See PATENTS.

Inverchapel, 1st Baron

Baron Inverchapel (Archibald John Clark Kerr) (1882), British statesman and diplomat, was born Mar. 17,
1882, a native of Lanarkshire, Scotland. Educated privately, he entered the diplomatic service in 1906 and served in a number of minor posts in various world capitals. During World War I, he enlisted in the celebrated Scots guards, 1918. He returned to the foreign service, receiving his first important appointment—that of British minister to Guatemala—in 1925. He also served as min-

ister to Chile, 1928-31, and Sweden, 1931-35.

His first ambassadorial post was in Iraq, 1935–37. In 1937, he was named ambassador to China. A friendly and "nonprofessional" diplomat, he enjoyed excellent relations with Chiang Kai-shek's government. Because of his diplomatic "flexibility," he was sent to Moscow in Feb. 1942 as ambassador to the U.S.S.R. At the time, British-Soviet relations, surfaced with diplomatic courtesy, were underlaid with deep and traditional distrust. The new ambassador, however, re-established more friendly relations and at one time was said to have ironed out a threatening snarl in relationships between Stalin and Churchill during one of the latter's wartime visits to the soviet capital. He attended the Tehran, Yalta and Potsdam conferences. It was announced Jan. 21, 1946, that Sir Archibald had been created 1st Baron Inverchapel of Loch Esk.

On Jan. 25, 1946, it was formally announced that the new peer had been made British ambassador to the U.S. Before assuming his new post, Lord Inverchapel went to Batavia, Java, on a special mission to mediate the Indonesian civil war. After returning to London to report on his mission, he embarked for the U.S. and presented his credentials to Pres. Truman on June 5, 1946.

Investment Banking

See BANKING.

Investments Abroad, U.S. and British

At the beginning of 1937, United States residents owned foreign securities and other property valued at \$11,000,000,000 (see table on page 727), about \$6,000,000,000 less than in 1930. Factors directly connected with the great depression were responsible for this decline. Operating losses served to reduce the book value of direct investments while the shortage of foreign—especially dollar—exchange stemming from a drastic lowering of world trade resulted in wide-spread defaults on dollar bonds. Prices of practically all foreign bonds fell sharply, and many of the securities were bought up by foreign countries at these reduced prices.¹

The figures in the foregoing paragraph do not include debts arising out of World War I owed to the U.S. government by foreign governments, including that of Germany. (See WAR DEBTS [WORLD WAR I].) It became clear by the middle '30s that little if anything would be collected further on these obligations, and it became customary no longer to include them in formal statements of U.S. investments abroad.

United States investments were concentrated in the western hemisphere, with Canada accounting for 28% of the total and Latin America for 37%. More than 50% of United States direct investments in Latin America were in extractive industries—agriculture, mining and petroleum—whereas in Canada more than 40% of the total was in manufacturing and related industries, such as paper and pulp. In Europe manufacturing and distribution accounted for well over half the total, while direct investments in the eastern hemisphere other than Europe were well distributed industrially.²

So-called portfolio investments—chiefly dollar bonds publicly sold in the United States in the '20s—were valued at \$3,500,000,000 (at market values) in 1936, of which about 35% were in default. Only a small portion of these securities—about 10%—were issues of private obligors; the re-

Direct investments are those in enterprises usually under the control of the investor—chiefly foreign branches and subsidiaries of domestic corporations. Portfolio investments consist of miscellaneous securities—such as dollar bonds—involving no management control on the part of the investor.

²U.S. Depart of Commerce, American Direct Investments in Foreign Countries, 1936 (1938)

mainder were obligations, direct and indirect, of foreign governmental entities.

The three years 1937–39, enclusive, saw little activity in the foreign-investment field. The market for new foreign bond issues in the United States had been almost non-existent after 1931, while the relatively depressed state of domestic economic activity precluded any large-scale foreign expansion on the part of U.S. industry. It is true that the value of direct investments rose slightly from \$6,700,000,000 at the end of 1936 to \$7,000,000,000 at the end of 1939. In some measure at least this resulted from the forced reinvestment of earnings; exchange restrictions in many countries prevented the transfer of these earnings to the United States in the form of dividends.

Substantial real and voluntary increases, however, took place in certain fields. Under the continued stimulus of preferential tariff arrangements and in keeping with the general industrial development of that country, the value of branch plants in Canada increased by more than \$100,000,000 between 1936 and 1940 (detailed data for 1939 were not available). The petroleum industry was especially active in developing new producing fields and enlarging refining capacity, particularly in Latin America (Colombia, Venezuela and Aruba, West Indies) and the middle east (Saudi Arabia and Bahrein Island). On the other hand, expropriation of the entire petroleum industry in Mexico by the government of that country wiped out U.S. investments valued at \$69,000,000 in 1936, although, as discussed below, some compensation was later received by the owners.

Various other factors had a substantial effect on the value of United States direct investments abroad during the prewar period, although the exact magnitudes could not be ascertained. Exchange depreciation took its toll, particularly in Europe and Latin America. Sales and liquidations amounted to \$87,000,000 during the 3-year period. On the other hand, reinvested earnings accounted for a \$344,000,000-increase in value.

Portfolio investments declined from \$3,500,000,000 at the end of 1936 to \$2,600,000,000 at the end of 1939. Most of this decline was because of continued redemptions and repatriations in excess of new issues; the par value of United States holdings of foreign dollar bonds fell from \$4,741,000,000 in 1936 to \$3,335,000,000 at the end of 1939. However, the average market price of United States-held foreign dollar bonds also declined during the period, from 74.7% of par value to 64.7%.

A few debtors who had defaulted on debt service during earlier years made adjustments with the bondholders during this period, among them Uruguay, Cuba, Chile and Poland. However, new defaults took place on Brazilian, Costa Rican, Yugoslavian, Austrian, Czechoslovakian and municipality of Panamá issues.

United States short-term investments abroad were also reduced during this period, and total investments—direct, portfolio and short-term—were valued at only \$10,200,000,000 at the end of 1939, compared with a maximum of about \$17,000,000,000 in 1930—31, and \$11,000,000,000 at the end of 1936.

The War in Europe, 1940-41.—With the outbreak of World War II in Europe, and especially following the German conquest of western Europe in the spring and summer of 1940, most U.S. corporations wrote off their books the value of subsidiaries and branches in German and German-occupied territories. Moreover, quite a number of them made efforts (sometimes successful) to dispose of their properties in Europe. International Telephone and Telegraph Corp., for instance, sold its Rumanian

operating subsidiary, and Eastman Kodak disposed of its 50% interest in Chemische Werke Odin of Germany. Other transactions were stopped by the U.S. treasury department, which by that time had frozen foreign funds in the United States and refused the necessary licences to transfer funds for this purpose, at least in some cases. Other U.S. companies were able to withdraw the liquid funds of their subsidiaries by transferring them to the United States in the form of advances to themselves. However, most U.S. property on the continent, except in neutral countries, remained to suffer from the active warfare which followed, although damage in 1940–41 was apparently relatively light.

Although certain bonds issued in the 1920s carried provisions calling for payment in time of war or peace regardless of the nationality of the holder, it was no surprise that axis countries or countries under axis domination did not service their dollar debt after the outbreak of war. Italy defaulted on all its dollar obligations on June 10, 1940, the date of that country's declaration of war on Great Britain and France. Japan, of course, also defaulted on the outbreak of war with the United States. Estonia and Czechoslovakia were forced to default after occupation by the U.S.S.R. and Germany, respectively. Bulgaria, Danzig, Germany, Greece, Hungary, Poland, Rumania and Yugoslavia also stopped all payments to the United States by the end of 1941, although none of these countries had previously been meeting full contractual service on their dollar obligations.

U.S. Investments Abroad, 1936, 1939 and 1946 (In billions of dollars)

	1936	1939	1946
Private direct investments	6.7	7.0	7.9
Private portfolio investments	3.5	2.6	3.0
U.S. government long-term investments	*	*	6.1
Total long-term investments	10.2	9.6	17.0
Short-term investments	.8	.6	.6
Total investments	11.0	10.2	17.6

*Hess than \$50,000,000. Source: 1936 and 1939, Dept. of Commerce. 1946, estimated by author. Portfolio investments at market value, all others at book value.

The occupied countries of western Europe, on the other hand, managed to continue payment, except for the city of Antwerp, Belgium. Norway, Belgium and France—the two former operating through governments-in-exile—maintained full service while Denmark paid interest only, defaulting on sinking fund payments and on a \$30,000,000 maturity on Jan. 1, 1942.

By the end of 1940, the United Kingdom had practically exhausted its gold and dollar reserves, and it became evident that some other means would have to be found if that country were to continue purchases of war matériel and essential civilian supplies in the United States. Although the Lend-Lease act was passed in March 1941, the United Kingdom had already made commitments involving further large dollar outlays. As part of a series of measures designed to provide the necessary dollars, the Reconstruction Finance corporation in July of that year announced a loan of \$425,000,000 to Great Britain, secured, however, by a pledge of United States securities owned either by the British government or its nationals having an estimated value of more than \$500,000,000. Only \$390,-000,000 was actually disbursed, and since the income on the pledged securities was used to service the loan, the amount outstanding was reduced to about \$200,000,000 by the end of 1946.

In connection with the U.S. defense program, the Ex-

port-Import bank substantially extended its activities during this two-year period. Loans were made to Latin American countries to "assist generally in stabilizing their economies" and as "a part of the program to increase the delivery of strategic materials required in the United States." Primarily as a result of this Latin American program outstanding loans of the bank increased from \$65,200,000 at the end of 1939 to \$176,100,000 at the end of 1041.

Thus, even before its entry into the war, United States government credits to foreign countries became an important feature of the nation's international transactions, although the amounts involved were small relative to the huge lending program in which that government engaged

in 1946.

After U.S. Entry into World War II.-Although many U.S.-owned properties abroad suffered extensive physical damage during World War II, the actual net financial loss to U.S. investors could not be determined with any reasonable degree of accuracy. In most instances, probably, destruction was by no means complete, and the properties were or were scheduled to be returned to their United States owners. In some countries compensation was paid under war damage insurance or similar arrangements. Moreover, a special provision of the United States income tax laws permitted deduction of certain war losses in computing net taxable income, thus resulting in substantial tax savings for some companies. For the owners of direct investments as a group, moreover, losses in war areas were in a sense partly offset by larger-than-usual earnings on investments in the western hemisphere.

In spite of the many factors mitigating against such activity, some evidence of renewed interest in new direct investments abroad became apparent during the war. Mexico, for instance, reported a large number of new U.S. enterprises during the war years, many of them representing joint ventures of U.S. and Mexican capital. Large sums were spent on oil prospecting and development in Venezuela, Colombia and western Canada. Iron ore deposits were developed with U.S. capital in Canada and Venezuela; U.S. interests acquired control of the well-known Transportes Aereos Centroamericanos air line in Central America, and innumerable instances of the formation of new foreign subsidiaries of U.S. companies were reported in the press.

On the other hand some important liquidations occurred. International Telephone and Telegraph corporation sold its telephone-operating systems in Rumania (in 1941) and in Spain to the governments of those countries. About \$100,000,000 was involved in the two transactions. War-induced prosperity in the sugar industry led, paradoxically, to the repatriation by Cubans of a substantial number of U.S.-owned sugar properties in that island. Several of these had been owned by U.S. banks, who were forced to take them over to satisfy unpaid bank loans in the depression years of the early '30s.

In 1943 agreement was reached with the government of Mexico whereby about \$29,000,000 was to be paid for most of the petroleum properties expropriated in 1938, thus bringing to a close one of the most bitter disputes in the history of U.S. enterprise abroad.

The problem of expropriation was raised anew in 1945-46 as certain European countries—notably Poland and Czechoslovakia—undertook to nationalize their basic industries. Although compensation to foreign (Allied) investors

was promised, the details still remained to be worked out.

No new defaults on foreign dollar bonds were recorded during the war; on the contrary several long-standing defaults were permanently adjusted. Mexico, Brazil, Guatemala, the city of Montreal, Que., and the province of Alberta were included among the debtors announcing adjustments. In large measure the Latin-American settlements were made possible by the enhanced foreign exchange position of the countries concerned, in itself a direct result of wartime influences on their balances of international payments.

Transactions in Canadian securities were ot special interest. Stimulated partly by the hope of a capital profit when and if the Canadian dollar returned to par, U.S. citizens purchased about \$555,000,000 in Canadian securities during the period from 1942 to May 1946 by transactions in the open market. These purchases were partially offset by Canadian redemptions (net of new issues) of outstanding issues of about \$230,000,000 during the same period. It remained to be seen whether the appreciation of the Canadian dollar announced on July 5, 1946, would result in the return to the United States of the large volume of funds invested in Canada during the war years.

* * *

By far the most significant development of the war and the immediate postwar periods was the emergence of the United States government as the dominant factor in the investment of U.S. capital abroad, both at long and short term. Lend-lease and surplus property credits, Export-Import bank loans, special loans to the United Kingdom and the Philippines, and investments in and through the International Monetary fund (q.v.) and International Bank for Reconstruction and Development (q.v.) were the principal avenues for this tremendous capital outflow which by the end of 1946, it was estimated, totalled no less than \$5,700,000,000.

The movement got under way, as already mentioned, in 1941 with the Reconstruction Finance corporation loan to the United Kingdom. This was followed by substantial investments by government corporations in connection with the procurement of strategic and critical materials from abroad. The Defense Plant corporation, for instance, expended some \$44,000,000 for construction of productive facilities in Cuba, Peru, Chile and Ecuador, more than three-fourths of this amount being for a nickel plant in Cuba. Far more important, however, were advance payments made to foreign suppliers by the Metals Reserve company, Defense Supplies corporation, the U.S. Commercial company, the Commodity Credit corporation and similar agencies. By June 30, 1945, about \$639,000,000 had been thus advanced, although \$525,000,000 had been recovered, largely through delivery of the commodities involved. The investment involved in these advance payments was thus clearly of a short-term character, although in some instances (notably a \$70,000,000 advance payment to the Aluminum Company of Canada by the Metals Reserve company) the advances were for the specific purpose of enabling the foreign supplier to expand his permanent capital equipment.

Activities of the Export-Import bank from 1942 to the middle of 1945 were relatively small. Loans outstanding increased from \$176,100,000 on Dec. 31, 1941, to \$214,100,000 on June 30, 1945. Practically all these loans were made to western hemisphere countries and to China. With the end of the war in sight, however, it became apparent that the United States government would have to extend substantial credits to war-devastated countries in Europe and

³Annual Reports of the Export-Import Bank, 1940 and 1941.

the far east if they were to provide for the rehabilitation of their economies without a further tremendous burden on current consumption or even outright starvation. With this in view the administration sought and received an increase in the lending authority of the Export-Import bank from \$700,000,000 to \$3,500,000,000.

The abrupt end of the war with Japan and the resulting termination of lend-lease brought an immediate drain on this expanded lending power to finance the purchase of supplies which had been requisitioned under lend-lease procedures but for which contracts had not been placed as of V-J day, Sept. 2, 1945. It was important that the flow of supplies to the foreign countries not be interrupted. Such loans were granted in the amount of \$655,000,000 to France, Belgium and the Netherlands on terms equivalent to those extended, under the authority of the Lend-Lease act, for goods already in the "pipeline"—already on order or completed but not transferred—as of Sept. 2. These terms—interest at 23/8% with amortization over a 30-year period—were substantially more favourable to the debtors than the terms of other Export-Import bank loans.

These special credits formed more than 60% of total new loans authorized during the 6 months ended Dec. 31, 1945, which totalled \$1,040,000,000. However, because of the length of time which elapsed between the time orders were placed and goods were delivered, loan disbursements (including disbursements on previous commitments) during the same period were only \$58,600,000. At the end of Dec. 1945, \$1,600,000,000 of the bank's lending power was committed, of which \$300,000,000 was actually outstanding in the form of loans and \$1,300,000,000 represented undisbursed commitments. By June 30, 1946, however, outstanding loans had risen to \$700,000,000, with undisbursed commitments at \$2,000,000,000, leaving only \$800,000,000 unused. Practically all of this amount, moreover, was earmarked for specific loans, and the administration had indicated earlier in the year that it would seek an additional increase of \$1,250,000,000 in the lending power of the bank. (See also Export-Import Bank of Washington.)

Because of the peculiar position of the United Kingdom in the world economy and because of the tremendous deterioration in the international financial position of that country during World War II, special measures were taken by the U.S. government to remedy the situation. In particular, a loan of \$3,750,000,000 was granted, repayable over a 50-year period beginning in 1951, with no interest during the first 5 years and interest at only 2% after that. The loan was really a line of credit, available at any time up to Dec. 31, 1951, and was accompanied by certain commitments on the part of Great Britain regarding international financial and commercial policy to free world trade of some of the shackles with which it had been bound from 1931 and which were drawn much tighter during World War II.

The loan agreement provoked a tremendous public controversy in the United States (and Great Britain, for that matter) but finally passed both houses of congress by substantial margins and was signed by the president in July 1946.

Special legislation authorizing a loan of \$75,000,000 to the newly-born Philippine republic was enacted in the closing days of the 79th congress. Unlike other foreign loans, however, this would be for the purpose of meeting an internal budgetary deficit rather than for purchasing imports from the United States or elsewhere.

Agreements were also entered into with various countries which received lend-lease aid during the war, providing for the transfer on a long-term credit basis of lend-

lease goods in inventory or on order when the war ended. In some cases these loans were tied in with over-all settlements of war-period transactions, including all lend-lease and reverse lend-lease aid furnished. Great Britain, for instance, received a credit of \$650,000,000 for this purpose, \$472,000,000 of which was for the so-called lend-lease inventory, and the balance for surplus property, net claims and net lend-lease and reverse lend-lease transactions occurring after V-J day. The French agreement, signed in May 1946, provided for a credit of \$720,000,000, \$300,000,000 of which was for surplus property and the balance the net amount due the United States on all war transactions, including post V-J day lend-lease. Similar agreements were negotiated with other lend-lease countries; the commerce department estimated that credits totalling \$1,500,000,000 might ultimately be involved. (See also LEND-LEASE.)

The Foreign Liquidation commissioner was authorized to dispose of overseas surplus for cash, for credit, in settlement of claims against the United States government or for property or property rights, including intangible property or rights. It was estimated that credits extended for the sale of surplus property abroad might well reach \$1,000,000,000. The terms of credit varied from country to country but in no case were less favourable to the United States than the credit terms of the principal lend-lease agreements—23/8% interest and a 30-year amortization period. It was indicated also that some small amount of domestic surplus would probably be sold abroad on credit terms; the amount involved might be considered to be a part of the \$1,000,000,000,000 estimate just mentioned.

In addition, the maritime commission, under the Merchant Ship Sales act of 1946, was authorized to sell surplus vessels to foreign governments or nationals on long-term credit. No estimate of the amount of credit likely to be extended was officially forthcoming, although it might conceivably amount to several hundred million dollars. Terms permitted under the act called for a 25% cash down payment, amortization in not more than 20 years, with interest on the unpaid balance at 31/2%. (See also Surplus Property Disposal, U.S.)

Whether the value of civilian supplies furnished by the war department in liberated countries should be considered an investment remained a moot question. Although the war department maintained that the governments concerned would be billed for the supplies, it was doubtful whether any substantial amount would ever be recovered. The program amounted to much more than \$1,000,000,000 by the middle of 1946.

The International Monetary fund and the International Bank for Reconstruction and Development (qq.v.), both of which began operations in 1946, led to further vast investments of U.S. capital abroad. The United States government quotas in these two organizations, to the extent actually drawn on, would in effect constitute foreign investments. In addition the World bank could call upon the private capital market for funds, either by offering its own bonds or by guaranteeing bonds of foreign countries which might be offered in the United States market. The farreaching importance of these institutions could not be overemphasized. The fund attempted to provide a workable substitute for the old gold standard by combining maximum stability of international exchange rates with minimum interference with internal credit and employment policies. Attainment of the first objective would do much

⁴Dept. of State, Office of the Foreign Liquidation Commissioner, Report to Congress on Surplus Property Disposal—April 1946.

to encourage the international flow of capital from countries where it was plentiful to countries in need of outside capital for developmental purposes. The bank, of course, would more directly encourage such capital flows by spreading the risk among the various national governments of the world instead of placing it on the individual investor. (See also Foreign Investments in the United States.)

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British Investments Abroad.—In the years immediately before World War II the increase in the amount of British investments abroad was checked as a result of the import surplus caused by rearmament. Moreover, an embargo was laid on the placing of foreign stocks and bonds in Great Britain. World War II brought about a sharp fall in the amount of British investments abroad. Before lend-lease began to operate the British government called in the U.S. securities held by British investors, in order to raise the dollars required for paying for vital imports. Apart from the dollar stocks and bonds employed as security for a loan from the Reconstruction Finance corporation, practically the entire British holding of U.S. securities was liquidated.

British investments in other countries were also practically liquidated or materially reduced. A number of dominion sterling loans were requisitioned and the proceeds were used for financing wartime imports from the dominions concerned. In addition, a number of overseas governments and private interests acquired large amounts of their British-held securities through purchases on the London stock exchange.

The German invasion of the continent and the Japanese invasion of southeast Asia caused further reductions in the amount of British investments abroad. Although the liberation of the continent restored to Great Britain its investments in western Europe, most of the money invested in central and eastern Europe was hopelessly frozen. Losses of investments in British and Dutch possessions and in China were much more substantial. Although British investors recovered their plantations, mines, factories, etc., after the end of World War II, the destruction wrought by war substantially reduced the value of these assets.

On the other side of the balance sheet there was the appreciation of many British investments abroad. The value of the dollar securities deposited with the Reconstruction Finance corporation increased materially as a result of the rise in Wall street shares. Rising prices resulted in an increase in the value of the remaining British holdings of South African gold-mining stocks and other empire investments. On the other hand, British investments in Latin America did not on the whole appear to have benefited by the prosperity brought to that continent

by wartime conditions, owing to the unwillingness of most governments concerned to allow foreign capital and enterprise to take a share in the benefit derived from that prosperity.

Before World War II British investment abroad was estimated at about £3,482,587,000. It was estimated to be considerably less than half of that figure in 1946. (P. Eg.)

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Iodine

Production of iodine was not reported in the United States after 1937, when it amounted to 299,286 lb.; the output increased considerably during the years of World War II, but declined somewhat in 1944. The bulk of the world's supply continued to come from Chile, as a byproduct in the production of sodium nitrate. Since the possible recovery exceeded demand, production was irregular, as needed to maintain stocks. Imports were brought to the United States on the same basis, annual receipts varying from a low of 200,000 lb. in 1939 to a high of 2,744,930 lb. in 1943 and back to 220,526 lb. in 1945. Total imports during 1937–45 were 10,112,867 lb.

(G. A. Ro.)

See W. T Salter, Endocrine Function of Iodine (1940).

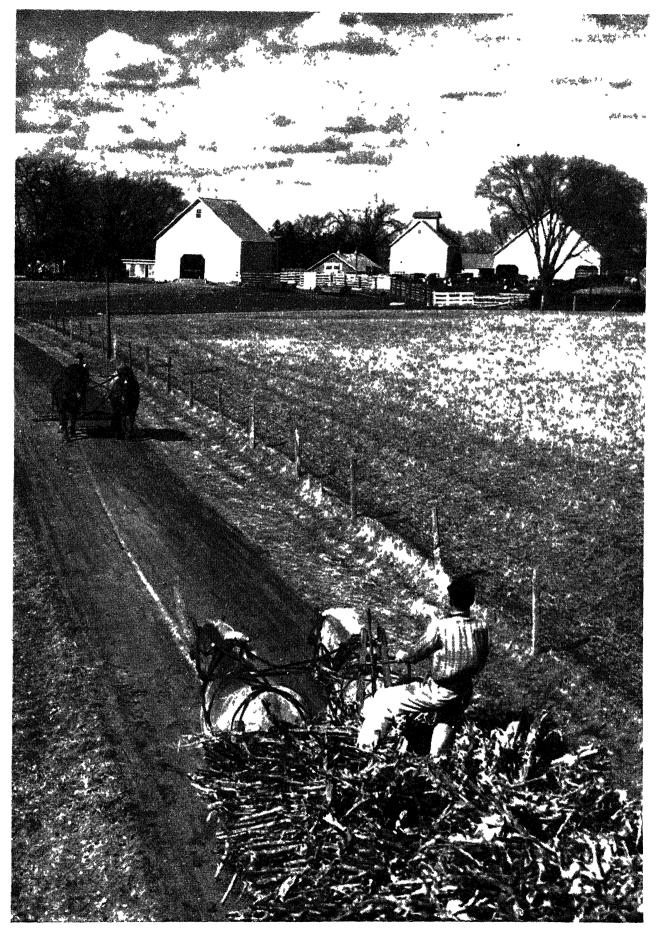
lowa

A north central state of the United States, Iowa was admitted as the 29th state on Dec. 28, 1846; popularly known as the "Hawkeye state." Area, 56,280 sq.mi., of which 294 sq.mi. are water. The pop. in 1940 was 2,538,268, with 1,084,231 listed as urban and 1,454,037 as rural. Of the total pop., 2,403,446 were native whites, 117,245 foreign-born whites, 16,694 Negroes and 883 belonged to other races. In 1944 the pop. was officially est. at 2,269,759. Capital, Des Moines (159,819). Other principal cities: Sioux City (82,364), Davenport (66,039), Cedar Rapids (62,120), Waterloo (51,743), Dubuque (43,892) and Council Bluffs (41,439).

State officers elected in Nov. 1936, who took office in Jan. 1937, were: governor, Nelson G. Kraschel; lieutenant governor, John K. Valentine; auditor, C. W. Storms; treasurer, Leo J. Wegman; secretary of state, Robert E. O'Brian; secretary of agriculture, Thomas L. Curran; attorney general, John H. Mitchell. A state conservation commission, a board of social welfare, a state commerce commission, a state planning board and an Iowa unemployment compensation commission were created or reorganized by the general assembly in 1937 (the planning board was abolished in 1939). The general assembly was in session from Jan. 11 to April 27, 1937. Among its important enactments was the complete revision of the motor vehicle code. The state highway patrol was increased from 50 to 103 men Provision was made for unemployment compensation, child welfare, old-age assistance, and the administration of social welfare. The tax laws were amended to provide a limited exemption for homesteads.

In the elections of Nov. 8, 1938, George A. Wilson (Rep.) was elected governor. Other state officers (all Rep.) elected were as follows: lieutenant governor, B. B. Hicken looper; auditor, C. B. Akers; treasurer, W. G. C. Bagley; secretary of state, Earl G. Miller; secretary of agriculture,

lowa farmland remained among the most productive in the U.S. during the years of World War II, and continued to yield the largest corn crop in the nation. Farmers are shown hauling corn stalks in Dallas county



Mark G. Thornburg; attorney general, Fred D. Everett; 732 superintendent of public instruction, Jessie M. Parker. In 1938 Iowa celebrated the centennial anniversary of the establishment of the territory of Iowa. (B. F. S.; X.)

Gov. Wilson was re-elected in the elections of Nov. 5, 1940. Other officers elected (all Rep.) were the following: lieutenant governor, B. B. Hickenlooper; auditor, C. B. Akers; treasurer, W. G. C. Bagley; secretary of state, Earl G. Miller, secretary of agriculture, Mark G. Thornburg; attorney general, John M. Rankin; superintendent of public instruction, Jessie M. Parker. In the presidential election Willkie received 632,370 votes and Roosevelt, 578,800.

State officers (all Rep.) elected Nov. 3, 1942, to take office on Jan. 1, 1943, were: governor, B. B. Hickenlooper; lieutenant governor, Robert D. Blue; auditor, C. B. Akers; treasurer, W. G. C. Bagley; secretary of state, Wayne M. Ropes; secretary of agriculture, Harry D. Linn; attorney general, John M. Rankin; superintendent of public instruction, Jessie M. Parker.

The general assembly was in session from Jan. 11 to April 8, 1943. Among the acts passed was one providing "rules of civil procedure." John M. Grimes was appointed treasurer on Oct. 21, 1943, to fill the vacancy caused by the death of W. G. C. Bagley.

In the elections of Nov. 7, 1944, principal state officers elected were: governor, Robert D. Blue; lieutenant governor, K. A. Evans; secretary of state, Wayne M. Ropes; auditor, Chet B. Akers; treasurer, J. M. Grimes; secretary of agriculture, Harry D. Linn; attorney general, John M. Rankin. B. B. Hickenlooper was elected U.S. senator to succeed Guy M. Gillette. Jessie M. Parker was elected superintendent of public instruction in 1942 for a fouryear term. All elected state officers and all Iowa senators and representatives in congress were Republicans. The popular vote for the Republican presidential electors was 547,823 and for the Democratic, 497,376. (R. A. Ga.)

The 51st general assembly, consisting of 50 senators and 108 representatives, met in regular session from Jan. 8 to April 12, 1945. One of the principal laws enacted was a compulsory retirement and annuity plan for all state and local government employees. Inadequate support and political control of state penal and charitable institutions

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	iow	a: Statistic	al Data			
	Table I	.—Educati	on (Public)			
	1938	1940	1941	1942	1943	1945
Elementary school pupils. High school pupils Elementary teachers High school teachers	382,586 136,564 16,834 7,485	25 151	358,527 137,646	357,049 133,885 24,808	352,168 126,475	343,464 116,277 22,951
	Table	II.—Public	: Welfare			
(Mo	ney figure:	s in thousa	nds of do	lars)		
Cases on general relief .	1937 35,590	1938 30.537	1939 27,202	1 9 40 28,789	1941	1944
Cost of general relief . Recipients of old-age	\$696	\$538	\$438	\$490	18,759 \$274	
pensions		50,677 \$1,005		55,109 \$1,153		50,804
ceiving aid Blind receiving aid		7,000 1,279		7,000 1,460	7,751 1,527	<i>7,574</i> 1,342
	Table I	II.—Comm	unications			
(Me	oney figure			ollars)		
	1937	1938	1939	1940	1943	1945
Highway mileage Expenditure on highways	\$28,450	9,565 \$27,373	9,620 \$24,239	\$32,517	8,581	9,600
Railroad mileage	9,203	9,082	9,042	9,017	9,351	
			Table !	V.—Banki	ing and Fir	ançe

1937

\$86,598

1938

\$89,901

\$231,949

1939

\$91,617

\$252,220

108

1940

\$74,906

649 644 642 103 102 100 \$275,212 \$485,790 \$603,137

	(,	All figures	in thousar	nds)		
	1937	1939	1940	1942	1944	1945 (est.)
income from crops and livestock Leading crops (bu.):	\$528,300	\$578,089	\$669,62	20		\$1,443,663
Barley Corn Hay (tons) Oats Potatoes Soybeans Wheat	12,448 498,690 4,021 271,998 4,920 4,236 14,649	13,271 494,312 4,994 155,496 5,600 11,562 6,902	2 460,58 6,57 3 206,64 0 6,12	31 <i>574</i> ,08 72 6,68 40 196,27 20 6,60 86 35,45	0 607,608 3 5,528 0 144,270 0 2,470 1 42,580	508,106 5,644 214,440 3,960 34,848
	1	able VI.—	-Manufact	uring		
	(Money t	figures in t	housands	of dollars)		
				1935	1937	1939
Wage earners				56,541 \$55,483 575,371	67,878 \$76,193 \$709,458	\$73,466
	Tabl	e VII.—Mi	neral Prod	luction		
	(All fi	ures in th	ousands c	of dollars)		
		937	1938	1939	1940 1	943 1944
Value mineral produc Leading products	tion \$2	6,941 \$	24,794 \$	25,484		
Cement	: : :	7,046 9,529 4,277 3,301	7,327 7,963 3,782 2,914	7,503 E		335 \$5,678 590 <i>7,4</i> 93 328 4,175
Sand and gravel .		2,235	2,300		1,852 1,6	86 2,084

Table V.--Agriculture

finally culminated in the death of an inmate of the Training School for Boys at Eldora, from the infliction of corporal punishment; a series of concerted escapes followed. A general investigation of conditions was begun.

Principal state officers elected in Nov. 1946 to take office in Jan. 1947, were as follows (all Republicans): governor, Robert D. Blue; lieutenant governor, Kenneth A. Evans; secretary of state, Rollo H. Bergeson; auditor, Chet B. Akers; treasurer, J. M. Grimes; secretary of agriculture, Harry D. Linn; attorney general, John M. Rankin; and superintendent of public instruction, Jessie M. Parker.

(R. A. GA.; J. E. B.; X.)

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Iran, an independent constitutional monarchy, is bordered by the soviet union to the north, Turkey and Iraq to the west, the Persian gulf and the Indian ocean to the south and Baluchistan and Afghanistan to the east. Its area in 1946 was 628,000 sq.mi.

The official estimate of the population in 1934-35 was 15,055,000. British military estimates were 30% lower. The Middle East Supply Center based distribution of goods on a population of 12,500,000 (1942–45). There had never been a complete census.

The urban population in the 40 largest towns numbered 2,500,000. Rural population was estimated at 7,500,000 to 8,000,000 while tribal nomads in mountainous regions numbered about 3,000,000 people. The population is composed of three main racial stocks. The Iranian (Persian, Gilak, Kurd, Lur and related groups) comprise 60% (about 8,000,000-9,000,000) of the population. The Turanian (Turki, Qashqai, Turkoman groups) comprise 35% (about 4,500,000-5,000,000) of the population. The remainder are of Semitic (Arab, Jewish or Assyrian) stock with a small sprinkling of Negroid elements in the south along the Gulf coast.

Tehran, the capital city, had a population of 540,087 according to the census taken in 1940-41, but war condi-

tions swelled this number to nearly 800,000 in the "bread census" taken in 1943. Other important cities, with their 1940-41

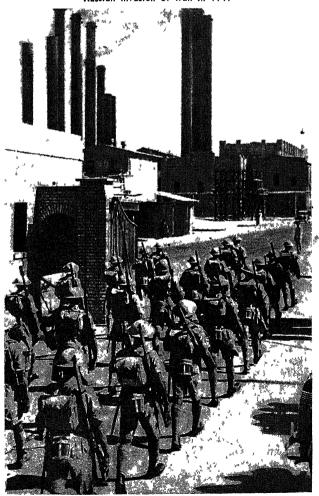
populations: Tabriz (213,542); Isfahan (204,598); Meshed (176,471); Shiraz (129,023); Resht (121,625); Hamadan (103,874); Kermanshah (88,622).

Persian is the official language, but north of 36° Turkish predominates on the plateau while a Persian dialect known as Gilak is spoken in the subtropical Caspian sea provinces. Kurdish is spoken along the western border, and various tribal dialects of Persian or Turkish known as Luri, Qashqai and Baluchi are spoken in the mountains along the southern borders. Arabic is a common tongue in Khuzistan (S.W. Iran). Armenians speak their own tongue while the Assyrians speak Syriac.

The state religion, established in A.D. 1499, is the sect of Islam known as the Shiah, recognizing 12 Imams. The 500,000 Kurds are Sunni. There are groups of subsects known as the Ali-illahi and also followers of the 19th century movements called Babis and their successors the Bahais. Christians belong to the Armenian Gregorian (50,000), the Nestorian (20,000), the Greek Catholic, the Uniate Catholic and the Protestant churches. About 15,000 Zoroastrians have their centre in Yezd. Jews (25,000–30,000) are concentrated in the cities of Tehran, Hamadan, Isfahan and Kermanshah.

Prime ministers during the decade were as follows: Mahmud Jam (Dec. 5, 1935–Oct. 26, 1939); Dr. A. Matin Daftari (Oct. 27, 1939–June 25, 1940); Ali Mansur (June

Riflemen of the Indian army entering the huge petroleum refinery on the island of Aradian, in the Persian gulf, during the Anglo-Russian invasion of Iran in 1941



25, 1940-Aug. 27, 1941); Mohammed Ali Feroughi (Aug. 27, 1941-March 2, 1942); Ali Suhaili (March 9, 1942-July 28, 1942); Ahmad Ghavam-es-Saltaneh (Aug. 1, 1942-Feb. 13, 1943); Ali Suhaili (Feb. 17, 1943-March 26, 1944); Mohammed Said Maraghei (March 28, 1944-Nov. 9, 1944); Murteza Quli Khan Bayatt (Nov. 21, 1944-April 17, 1945); Ebrahim Hakimi (May 11, 1945-June 3, 1945); Muhsin Sadr (June 8, 1945-Oct. 2, 1945); Ebrahim Hakimi (Oct. 24, 1945-Jan. 20, 1946); Ahmad Ghavam-es-Saltaneh (after Jan. 26, 1946).

Pahlavi's Iron Rule.—The last four years of Riza Shah Pahlavi's rule (1937–41) marked a period of tyranny. Riza Shah had developed tremendous energy which expressed itself in a mania for acquiring personal wealth as well as in attempting to make Iran a self-sufficient state. He was the nation's first consul, first merchant and first land-owner. Opposition was purged by legal or illegal means. Fearing revenge or assassination, the shah took elaborate precautions to isolate himself from the public. Utilizing his fear, unscrupulous hirelings blackmailed guilty and innocent alike. Prominent people lived in the grip of a mounting terror.

Centralization and control of the economic life of the country was effected by organizing about 27 government monopolies. These squeezed out any foreigners except the Germans, who entered into a large scale barter agreement after Hjalmar Schacht had visited Iran in the spring of 1937. Germany absorbed the largest share of Iran's agricultural exports and supplied machinery which needed German technicians to install and operate. While relations with Germany were improving, relationships with the United States, France and Great Britain were exacerbated by small and unimportant incidents which the shah, in his megalomania, took as personal insults. In 1938 relationships with the soviet union were irritated when the U.S.S.R. expelled 40,000-50,000 ragged and destitute people who, the Russians claimed, were Iranian citizens and had never applied for soviet citizenship. Among this horde the police detected several individuals whom they suspected of being soviet agents. There followed a spy purge in which some suspects were shot, some imprisoned and some disappeared. A few of the latter groups later became internationally famous. There was much talk of approaching war when Italy invaded Ethiopia, wherefore Afghanistan, Iran, Iraq and Turkey buried their minor differences and met at Saadabad, outside Tehran, and in July 1937 signed a nonaggression and friendship pact, intended to lessen danger of foreign intrigue and invasion. Xenophobia was also responsible for the order issued in Sept. 1938, prohibiting Iranian citizens from enrolling in any foreign schools. Meanwhile the newspapers carried glowing reports of industrial progress-highly exaggerated-describing new textile mills, sugar refineries, soap and oil factories, a copper refinery, mammoth government buildings, mostly in or around the city of Tehran. The shah ordered elaborate ceremonials to dramatize the "era of progress." On Aug. 27, 1938, special trains carried all important officials to Sapid Cheshma (later renamed Fawzieh) to watch the driving in of a golden spike linking the tracks of the Trans-Iranian state railway. This 865-mi. road, costing \$154,708,133 raised mostly by tea and sugar revenues, had been under construction for almost 11 years and had surmounted engineering difficulties of the greatest magnitude. Yet the shah at once ordered extension of the rails to link other provincial capitals with Tehran. In March 1939 the Crown Prince Mohammed Riza, who had spent several

years in a Swiss school before returning to Iran in 1937, married Princess Fawzieh of the Egyptian royal family, with ceremonials surpassing anything Tehran had ever seen before.

At the same time there were strong undercurrents indicating that the top-heavy structure being built by the shah was approaching a collapse. Granting of an oil concession to the Am-Iranian Oil company (Seaboard Oil) had raised hopes of larger revenues and profitable employment. But in 1938 the company allowed the concession to lapse, stating that it did not feel the concession could be profitably operated at that time. The national budget was skyrocketing, having multiplied ten times in ten years from \$15,-000,000 in 1928 to \$150,000,000 in 1938. Forced settlement of the wandering tribes, diversion of the provincial wealth to concentrate on Tehran, and reliable reports of large scale corruption all combined to breed a spirit of revolt in the provinces. Tehran had grown from a city of 300,000 in 1925 to a city of 500,000 in 1939, while other cities and towns remained relatively stagnant by comparison.

When war came in Sept. 1939, Iran remained neutral, but economically the situation deteriorated rapidly. Iran had large credits because of heavy grain shipments to Germany, but imports practically ceased. Restriction of foreign goods and inadequate local production had combined to exhaust reserves of consumer goods. In 1941 harbingers of war multiplied when a group of Iraqi rebels accompanied by the grand mufti of Jerusalem fled from Baghdad on May 29 and entered Iran. In July the soviet union and Great Britain demanded that Iran expel the German colony, estimated at 1,500. Riza Shah promised to reduce their number gradually.

Allied Occupation.—Three major factors, however, impelled the Anglo-Russian allies to act at once. First was the danger of an axis fifth column in Iran. Second was the use of the Iranian transport system for supplies to the soviet union and third was the need for guaranteeing uninterrupted operation of Iranian oil resources. On Aug. 25 soviet armed forces poured in from the north while British empire forces attacked from the southwest. The Iranian army was totally inadequate to meet the situation and, after four days, resistance ceased.

The blow to Iranian morale was complete. The public was stunned while the shah was bewildered. Foreign radio broadcasts in Persian described how their ruler had terrorized them, embezzled funds, illegally confiscated land and possibly even stolen some of the crown jewels. On Sept. 16, the crushed monarch abdicated while foreign troops entered Tehran. His son, Mohammed Riza, then 23 years of age, mounted the throne. The 70-year-old exshah sought exile first in Mauritius and then in Johannesburg, South Africa, where he died in 1944. As his car took him south to board a British cruiser, the prison doors opened, freeing tens of thousands of political prisoners who held no love for the name of Pahlavi.

The public at first expressed some sense of freedom, but the accumulative evils of war, added to the inefficiency and corruption in public life, gripped the whole of Iran. Rains had been subnormal, and cereal supplies were low. The foreign armies began to purchase many supplies on the open market. More than 200,000 ragged and half-starved Poles entered Iran, bringing typhus with them. All transport was absorbed into the "Aid to Russia" plan under the authority of the United Kingdom Commercial corporation. Prime Minister Mohammed Ali Feroughi, aged, sincere and patriotic, found his government harassed

by emergency financial agreements, provincial tribal revolts, parliamentary anarchy and an undisciplined press castigating any authority. Economic chaos was intensified by unscrupulous hoarding; the Allies made military demands which Iran was reluctant to grant. Nevertheless on Jan. 29, 1942, Feroughi was able to get parliament to approve the Anglo-Soviet-Iranian treaty by which Iran granted all facilities to the Allies for prosecution of World War II, in return for which the Allies guaranteed to defend Iran, to respect its sovereignty and territorial integrity and to withdraw their armed forces within six months after the ending of hostilities. The tide of crises was rising while Feroughi's own strength was on the wane. On March 2, 1942, he resigned and left Tehran muttering, "The burden is too great." Shortly thereafter he died.

The task of the government was to find some equilibrium in the turmoil caused by the strains of war. The soviet. union demanded credits for purchases of supplies, both to feed its army in Iran and to import goods needed for the prosecution of the war. On May 2, 1942, a soviet-Iranian financial agreement was signed which was to result in Iran's giving a credit of \$35,000,000 for supplies and services to the soviet union, of which 60% was to be paid for in gold within six months of the termination of hostilities and the remaining 40% would be returnable in goods. The soviet drove another hard bargain in demanding full output of army light combat equipment under threat of heavy penalties. The British rushed improvement of trunk roads and began construction of a system of defense for the oil fields. Advance units of the U.S. army appeared in the summer of 1942, anticipating the 30,000 service troops of the Persian gulf command that followed six months later. To meet these unprecedented situations, the government decided to request a number of advisory missions from the United States. Within six months there were U.S. advisers to the army, the gendermerie, the police, the ministry of finance, the department of agriculture and public health, also a short-lived adviser to a special ministry of foods which was established in Sept. 1942.

The problem of food became paramount in the late fall of 1942. The soviet union purchased 40,000 tons of wheat and 30,000 tons of rice which exhausted known stocks in the country. To avoid famine conditions, Great Britain and the U.S. sold and shipped to Iran a total of 90,000 tons of cereals. The bakers in Tehran seized the opportunity to adulterate rationed flour with cheap ingredients, including straw, and then diverted part of their supply to the black market. Public patience came to an end in bread riots on Dec. 8, when some members of parliament were roughly treated and some British soldiers were killed in Parliament square. Prime Minister Ghavam suffered a plundering of his home during the disturbances.

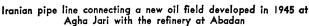
During 1943 the crisis began to abate. The soviet union returned 25,000 tons of wheat in May. There were superabundant rains. Addition of large numbers of locomotives and cars to the railways in addition to lend-lease supplies eased the transportation situation. On Sept. 9 Iran declared war on the axis powers. The same month the underground chief of the German fifth column, Franz Mayr, most of three parachute crews and some 200 members of Mayr's subversive group were rounded up and placed in custody. Later the remainder of the German agents were surrendered in the south. The German scheme to promote rebellion and sabotage had failed completely. The crowning event of the year was the Tehran conference of Generalissimo Joseph Stalin, President Franklin D. Roosevelt and Prime Minister Winston Churchill. A special communique of Dec. 1 recognized the assistance Iran

had given in World War II and noted the special economic difficulties which had grown out of world-wide military demands. They promised full consideration of postwar problems and recorded their desire for the "maintenance of the independence, sovereignty and territorial integrity of Iran."

(See also International Conferences, Allied [World War II].)

The summer of 1944 established two records. Supplies were flowing across Iran to the U.S.S.R. at the rate of 275,775 metric tons per month. Inflation also touched a new high. The cost of living index, compared with that of 1936-37, showed an average of almost 1,000% rise. Lodging had reached 1,500% while food and clothing were nearly 900%. The American Financial mission, although given extraordinary legal powers, faced some insurmountable factors, but it also found itself vociferously attacked by vested interests and speculators who were making large profits at public cost. Efforts to operate in the soviet dominated zone were completely frustrated. Signs of internal dissension were on the increase. A political party known as the Tudeh (masses) had been organized in 1942, its leaders coming from three main groups. The first included some of the earlier socialistic liberals of 1930-41 whom Riza Shah had imprisoned. To these had been added a group of those who had come in from the soviet union in 1937-39, while a third component was made up of former Iranians and Caucasians who had entered in the wake of the soviet armed forces. The party was strong only where there were soviet troops. In the opposing camp was a group of conservatives rallying about the person of Saiyid Zia ud-Din Tabatabai, stormy petrel of earlier days, who had been prime minister in 1919, then fled the wrath of Riza Khan the same year. Widely accused of being a British agent, he returned from Palestine in late 1943, organized several political groups and vigorously attacked the Tudeh and the soviet union's interference in Iranian internal affairs. The two groups came into open and violent collision in Sept. 1944 over the touchy question of oil concessions.

Trouble with the U.S.S.R.-In Sept. 1944, two U.S. oil representatives and one from Dutch Shell Oil opened negotiations for concessions in southeast Iran. Shortly following them, a large soviet delegation arrived, headed by Sergei Kavtaradze, undersecretary for foreign affairs of the U.S.S.R. The proposals of the three aforementioned companies were clearly defined, but Premier Said was unable to get a definitive statement from the soviet union other than that their concession would include all mineral and subsoil rights, communications, trade schools and other associated prerogatives in an area of 216,000 sq.mi. then held by soviet troops. Iran's dealings with the soviet union connected with the financial agreement of 1942, the munitions contract of the same year and the Caspian sea fisheries all showed heavy deficits, though the latter should have produced substantial profits. The Iranian government, made up from the small class of landowners, was hesitant to do business with a totalitarian state professing the communistic creed. Wherefore on Oct. 16, the prime minister announced his cabinet's decision to defer all oil negotiations while foreign troops were on the soil of Iran. On Oct. 17, Tass reported the refusal following which the soviet press and radio sharply attacked the Iranian government, calling it unfriendly and accusing it of fomenting sabotage. Throughout the soviet-occupied zone of Iran, the Tudeh party, often accompanied by trucks bearing soviet armed troops, organized demonstrations, demanding



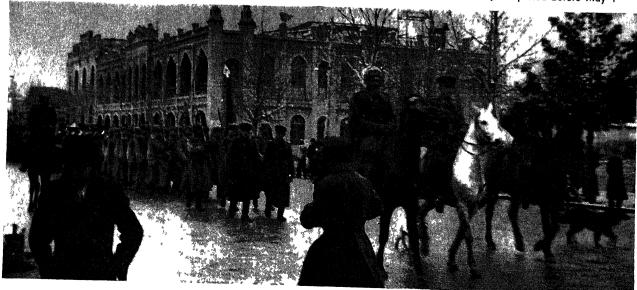


the fall of the government and the granting of the oil concessions to the U.S.S.R. The soviet ambassador refused to meet the prime minister. Violence occurred and in several incidents, soviet troops disarmed and imprisoned central government security forces. Shipments of food from the north were halted. Unable to weather the storm, Premier Said resigned on Nov. 9. For the next 14 months Iranian cabinets fell with monotonous regularity while the soviet union failed to reply to practically all of the communications addressed to it by Iran. To ease the pressure upon the cabinet, parliament voted on Dec. 3 to forbid ministers from conducting negotiations of a legal character regarding oil. Kavtaradze publicly announced his disapproval of the law and departed, but from that day the Tudeh party seized authority in the soviet occupied areas, set up armed police posts on the roads, and completely paralyzed the functioning of the Tehran govern-

In May 1945, after V-E day, the Iranian government requested foreign troops to withdraw. The United States replied that it was already so doing. The British stated they were sympathetic but would have to consult with their allies. The soviet union did not reply. National elections were scheduled during the fall, but parliament, noting the iron vise by which the Tudeh was ruling the northern provinces, voted to delay elections till all foreign troops had withdrawn. Victory over Japan produced an electric effect in the Tudeh party. In Aug. 1945 party chiefs and prominent Kurds were taken to Baku in soviet territory and there instructed by Pres. Muhammad Baghiroff of the Azerbaijan socialistic soviet republic how to form a new "democratic party." On Sept. 2, Tudeh leaders in Tabriz issued a manifesto of the new "democratic party" and on Sept. 17 the same men assembled and dissolved the provincial Tudeh party. The soviet ambassador refused a request of the Iranian government to send extra gendermerie units to Iranian Azerbaijan, whereupon the Iranians on Sept. 12 sent a second note requesting all foreign troops to withdraw. A week later Great Britain suggested a partial troop withdrawal, to which Soviet Foreign Minister Vyacheslav Molotov replied that soviet withdrawal was governed by the Tripartite treaty of 1942 and no discussion on the matter was called for. The Tudeh party, now called Democratic, emerged in Azerbaijan province with its own private army, the arms largely being those captured by the soviet forces from the central government in Aug. 1941. When Iran attempted to assert its right to send reinforcements to the security forces in the northwest, soviet tanks stopped them near Kazvin on Nov. 18. Isolated, threatened and in some cases attacked, with small units wiped out, the beleaguered government forces in Azerbaijan surrendered by Dec. 12, when the Democratic party decreed the establishment of an autonomous state and the soviet consul graced the first meeting of the People's congress in Tabriz. Shortly thereafter, when reinforcements of soviet combat troops manoeuvred in their vicinity, the Kurds issued a manifesto of autonomy.

On Nov. 24, the United States suggested that all foreign troops evacuate Iran by Jan. 1, 1946, which it proceeded to implement at once. The soviet government refused and Great Britain followed suit. After other unsuccessful attempts, on Jan. 19, 1946, Iran complained against soviet interference to the United Nations Security council meeting in London. To this accusation Andrei Vishinsky replied, "It is true," but he insisted that the two countries could solve their difficulties by bilateral negotiations. When the date set by the treaty for soviet evacuation arrived-March 2, 1946-the soviet announced that they would remain indefinitely in certain areas of Iran. The new prime minister, Ahmad Ghavam, was in Moscow, yet on March 3, claiming that soviet demands exceeded his constitutional authority, he protested the refusal of the soviet union to abide by its treaty obligations. The same day Great Britain protested the breach of the Treaty of 1942, and on March 6 the United States addressed a note urging the soviet union to adhere to its pledges. The latter two notes were not answered by the U.S.S.R. Iran then complained a second time to the Security council on March 19. At the sessions the soviet representative, Andrei Gromyko, at first denied the right of Iran to complain, then he sought a postponement; later he threatened to boycott sessions if the council should consult the Iranian representative. On April 4 he announced that the soviet would withdraw by May 9 unconditionally after Ghavam had agreed to the

First Russian troops to leave Iran, shown moving through Meshed in eastern Iran on April 2, 1946. Evacuation, which was to have taken place by March 2, according to the Anglo-Soviet-Iranian treaty of 1942, was not actually completed before May 4



formation of a joint Soviet-Iranian Oil company. The soviet representative stayed away from Security council sessions whenever the Iranian complaint was scheduled to appear on the agenda. The oil proposal had to await the approval of parliament, which had come to an end on March 11, 1946. Election of the 15th parliament awaited soviet evacuation of Iran, which was unofficially reported late in May although rumours persisted that many agents remained behind in Azerbaijan uniforms. After May 9 the Azerbaijan leaders indicated a less belligerent attitude toward the central government, and with the soviet ambassador often sitting in on the negotiations, an agreement was finally announced on June 13 by which Azerbaijan would retain most of its autonomy.

With an apparent solution of Russian-Iranian relationships in sight, the prime minister turned his attention to internal reforms. A general reorganization of Iranian economy was forecast in the appointment of a supreme economic council, a supreme labour council and in the promulgation of orders proposing distribution of public domains to the peasants, reforms in landowner tenant relationships and in public services. A number of conservative newspapers were suppressed; Saivid Zia ud-Din Tabatabai and other conservatives were arrested, and stern warnings were issued against obstructionism. There was a general exodus of wealthy landowners who had been identified with what the soviet had denounced as reactionaries while Tudeh leaders began to appear in places of authority. For the moment, at least, Iran, under the steering of Ahmad Ghavam, was sailing in a new direction.

What this direction was became alarmingly clear within a month. The Tudeh party, now protected by soviet representation in Tehran and possessing a "people's" army in Azerbaijan, struck swiftly southward to capture and consolidate the oil-rich gulf regions as rapidly as possible. A general strike of Tudeh-affiliated trade unions was called in the Anglo-Iranian oil refinery at Abadan on July 14, 1946, which resulted in three days of bloody fighting and the establishment of martial law. But this bold move aroused violent reactions on the part of anti-communist groups, especially the Qashgayi tribes, who demanded a purge of pro-soviet elements. They revolted in Oct. to enforce their demands. At the same time it became painfully apparent in Tehran that cabinet members were reporting directly to the soviet ambassador. This brought on a national crisis on Oct. 16 resulting in the dropping of five Tudeh and pro-soviet members from the government. Aroused by these events, Iran decided to have a final showdown on the Azerbaijan issue. On Dec. 9, Ghavam ordered armed forces to enter Azerbaijan and reestablish central government authority. The local population not only refused to fight for their soviet-imposed rulers but turned upon them. By the 11th, the band of Caucasian adventurers who a year before had set up the so-called autonomous regime, had fled back to the U.S.S.R. Iran was again sovereign in its own realm.

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lra	n Statistical Data	•	
	1938		1944
Value (000's Item omitted)	Amount or Number	Value (000's omitted)	Amount or Number
Exchange rate United States Great Britain	1 rial = 6.1 cents 80.5 rials = £1	·	1 rial=3.1 cents 128 rials=£1
Finance Government \$76,400 revenues(£15,627) Government		\$98,058* (£24,302) \$98,053* (£24,301)	
Railroads	1,072 mi. 8,700 mi.		
Telegraph lines Radio sets	11,960 mi.† 3,500 †		
Petroleum	78,372,000 ьы.		73,90 7,37 1 ьы.*
Crops Wheat Barley Rice	2,140,997 tons 779,216 " 421,189 "		1,267,645 tons * 582,014 " * 341,713 " *
Livestock Sheep Goats Cattle	13,711,160 6,999,395 2,914,150		
Forest products Railway sleepers Gums (exports only) . \$3,337 (£683)	300,000		
Exports— Total		\$114,017 (£28,257)	•••
Mineral oil		\$93,737 (£23,231) \$4,724	9,299,055 tons
(£1,310) Raw cotton \$5,341	•••	(£1,171) ‡	6 ,,
(£1,092) Hides and skins \$5,004 (£1,024)		\$1,033 (£256)	1,210 ,,
Imports— Total	•••	\$43,679 (£10,825)	
Metals and hardware \$11,530 (£2,358)	•••	\$556 (£138)	1,564 tons
Cotton piece goods . \$11,192 $(£2,289)$ Machinery and tools . \$5,626	•••	\$6,789 (£1,683) \$838	2,578 ,, 743 ,,
(£1,151) Defense	•••	(£208)	, 40 "
Standing army personnel Reserves Military expenditures .\$19,485 (£3,985)	1 <i>5</i> 9,000 1 <i>3</i> 9,000		
Education Schools Students Teachers Universities 1943. 11939. ‡\$114 (£28).	8,381 457,236 13,078 1		

Irac

Iraq is an independent state, governed by a limited monarchy. It is bordered by Iran to the east, Turkey to the north, Syria and Trans-Jordan to the west and Saudi Arabia and the Persian gulf to the south. Its area increased to about 175,000 sq.mi. after definition of the desert borders in 1932–33. The population was estimated in 1943 at 3,995,000, composed of the following categories: urban 600,000; dominantly agricultural 1,800,000; seminomadic 995,000; pure nomads (Bedouin) 600,000. Composition by races was as follows: dominantly Arabic stock 3,000,000; Kurds 750,000; Jews 88,000; Turkoman 75,600; Iranian 65,000; Assyrian 17,000; Armenian 6,000.

Baghdad, the capital city, had a population estimated at about 300,000. Other chief cities: Mosul (100,000), Basra (80,000), Najaf and Kirkuk (about 40,000 each), Hillah, Karbala, Kadhamain, Tel Afar (about 20,000 each) and Erbil (17,000).

Arabic is the predominant official language, spoken by 90% of the population. Kurdish is recognized in the

northeastern liwas as a secondary official language. It is spoken by about 20% of the population. Many people are bilingual or multilingual and in addition to Arabic speak Persian (15%) Turkish (6%) or Syrian and Armenian (only a few thousands in either case).

Islam is the dominant faith. In 1932, religious affiliations were estimated as follows: Shiah sectarians, 1,612,533; Sunni sectarians, 1,029,833. These figures should be increased about 25% for 1946, the former then being near 2,200,000 and the latter 1,450,000. Christians of various faiths (Chaldean, Jacobite, Nestorian, Gregorian and Protestant) numbered 135,000 in 1943. Yezides (devilworshippers) and Sabians (disciples of John the Baptist) numbered about 40,000 in 1946.

All vital statistics for Iraq were based on estimates of registrations in the larger cities and towns; there had never been a national census.

Eight prime ministers served Iraq during the decade 1937–46: Hikmat Sulaiman (Oct. 29, 1936-Aug. 15, 1937); Jamil Al Midfai (Aug. 17, 1937-Feb. 1940); General Nuri as Said (Feb. 1940-April 6, 1940); Rashid Ali Al Gailani (April 7, 1940-Jan. 29, 1941); General Taha Al Hashemi (Feb. 1, 1941-April 1, 1941); Rashid Ali Al Gailani (April 2, 1941-May 29, 1941); Jamil Al Midfai (June 1, 1941-Oct. 10, 1941); General Nuri as Said (Oct. 11, 1941-June 10, 1944); Hamdi Al Pachachi (June 12, 1944-Feb. 25, 1946); Tawfiq as Suwaidi (Feb. 28, 1946-May 25, 1946); Arshad Al 'Umari (June 1, 1946-Nov. 12, 1946); Nuri as Said (after Nov. 24, 1946).

Rule by Violence.—The deceptive calm of national life had been shattered on Oct. 29, 1936 by a military revolt. The swashbuckling Kurdish Gen. Bekr Sidqi, hero of the Assyrian "incident" and massacre of 1933, while directing manoeuvres of the army outside of Baghdad, treacherously murdered Jafar Pasha Al Askari, veteran commander in chief and leader of the Arab revolt, turned his army against the city, put the government to flight and masked the mailed might of army rule by the mild civilian government of Prime Minister Hikmat Sulaiman. Behind this façade, Sidqi gave Iraq a sample of army-political rule.

To many Iraqis, especially the younger elements, this departure from mediocre, nonrepresentative, somewhat inefficient and "city-politician" government was welcome. Four years earlier, when Iraq had gained independence, a relatively miniscule clique of those who had co-operated with British mandatory officials had entrenched themselves in government. In 15 years, 21 cabinets had been recruited from about 40 persons. The new government vigorously started a housecleaning. The long smouldering tribal revolts were largely suppressed. Inspired by the example of Turkey, a party of National Reform, boasting an ambitious scheme to modernize the land, was established. Warned by the Italian attack upon Ethiopia, Iraq hastened in 1937 to end her minor quibbles with neighbouring states and signed, along with Afghanistan, Iran and Turkey, the Saadabad pact, a treaty designed to safeguard the signatories from external intrigue or attack. But this whole scheme came to a dead stop Aug. 16, 1937 when a fellow Kurd, during manoeuvres in Mosul, cut short Sidqi's career with an assassin's bullet. His organization at once collapsed, and government reverted to the former group of aging political leaders who had survived the year.

There were many factors operating to undermine constitutional rule. Ranking officers to whom the taste of power had been sweet could not resist the temptation to dictate political affairs. Four of these banded together into the



The Grand Mufti of Jerusalem and former Premier Rashid Ali Al Gailani of Iraq during a public appearance in Germany on the second anniversary of the British occupation of Iraq in May 1943. Both anti-British figures had sought refuge in Germany

self-styled Golden Four (Golden Square). They gradually began to symbolize policies popular with many of the people. They were bitterly anti-British, claiming that British bases and advisers vitiated Iraq's freedom. They proclaimed that the Arab revolt had been only half won by driving out the Turk and should continue until the British and their agents had been made impotent. Their most emotional and potent plank was pan-Arabism, with its concomitant anti-Zionistic campaign. They rode the crest of the wave of nationalism which produced emotions akin to hysteria at times, and led to occasions of violence and bloodshed. In June 1938, Roger Cumberland, a U.S. missionary at Dohuk, was assassinated by a well-known Kurdish brigand whose gun was for hire. Eight years later the murderer, never having been arrested, still moved freely under the protection of those who instigated the crime. The crown, which under King Faisal I had served as a restraining and balancing element, under his son Ghazi practically ceased to play a significant role. The latter had not developed any capacity to reign. By 1938 rumours concerning palace life culminated in the establishment of a privy council to control the affairs of the royal family.

The German minister (Hans Grobba) and the Italian minister were subsidizing potential trouble, and their efforts were meeting with some success. In April 1939 King Ghazi, while racing his high-powered car at night, lost control and careened into a post. He was killed instantly. In Mosul violent elements twisted the news into a rumour that the British had murdered the king. They collected a mob which swirled down the streets to the British consulate and murdered George Monck-Mason the consul. Marked by such ominous incidents, the child Faisal II, then not quite four years old, was made king under the regency of his father's cousin and brother-in-law, the 26-year-old Abdul Ilah. The tide of anti-Zionistic fervour was flowing high, accelerated by the arrival the same

year of the refugee grand musti of Jerusalem. A local divine proceeded to issue a declaration of a holy war which culminated in the murder of several Jews in isolated streets. All this was combined with a sense of economic stagnation.

Revolt of the Golden Square.—Events in Europe tipped the scales in favour of the dissident factions. The unity of the political clique was broken by the defection of Rashid Ali Al Gailani, who in 1940 secretly aligned himself with the Golden Square. When World War II broke out, Nuri as Said obtained a diplomatic break with Germany, forcing Dr. Grobba to leave, but by means of the Iraqi minister to Turkey, the Golden Square remained in touch with Franz von Papen, the German ambassador at Ankara. In April 1940 they forced the regent to dismiss Nuri as Said and nominate Rashid Ali Al Gailani in his place. In Jan. 1941 they tried to force the regent to dissolve parliament, but the former fled from his capital and took refuge with a friendly army general at Diwaniyeh. Uncertain of what turn the war in Europe might take, Rashid Ali decided not to violate constitutional procedures until the spring offensive should indicate the relative strength of the British and German armies. Gen. Taha Al Hashemi was then named as premier, although it was freely predicted that a British show of strength would bring Nuri as Said back into office, while a German victory would cast the die in favour of Rashid Ali. On April 2, the Golden Square and Rashid Ali decided the time was ripe, forced Taha Al Hashemi to resign, set up their own government and attempted to give it the semblance of constitutional legality. The regent fled for sanctuary to Basra and then to Trans-Jordan. Although Rashid Ali declared his intention to abide by the Anglo-Iraq treaty, Article IV of which stated that in case of war Iraq would furnish Britain all facilities and assistance in its power, the British, noting movements of an axis disarmament commission in Syria and clandestine contacts with Von Papen in Turkey, decided to reinforce their bases at once. Encouraged by British reverses in Libya and the fall of Athens in Greece, Rashid Ali insisted upon a drastic limitation of British forces and on April 29 organized an attack upon the British positions in Basra and Habbaniya.

The British React.—Within a week Grobba and a few squadrons of German planes appeared on the scene, but the Iraq forces west of Baghdad were routed by R.A.F., Assyrian and Kurdish levies, strengthened by units from Palestine. These reached Baghdad on May 29 to find a city in chaos. About 350 Jews had been massacred, while for a month the European colony had lived in the British and U.S. legations under constant threats. The leaders of the short lived revolt scattered and fled either to Iran, where many were captured a few months later, or to Turkey and then to Germany. Subsequently all four colonels of the Golden Square were captured and hanged; but in Sept. 1945, disguised as a merchant, Rashid Ali escaped and smuggled himself into Saudi Arabia, where-he continued to live as an unwelcome guest of King Abdul

The political tempests had not disrupted fundamentally the civil or economic life of Iraq. The moderates again assumed office and began the difficult task of adjusting to a war world. Economic maladjustments arose, primarily in imported goods, which were apportioned by the Middle East Supply centre set up in Cairo. During 1942 as Allied aid began to flow across Iraq toward the U.S.S.R., a United States military mission appeared. Goods and services given by Iraq to the United Kingdom accumulated a credit of £150,000,000 (\$600,000,000) in the sterling balances, while

in the two years following March 1941 the currency circulation increased from Iraq dinars 6,623,291 (\$26,500,000) to about 34,000,000 (\$136,000,000.) During six years of war, the price level was held down to about 350%. Civilian agencies continued to operate almost normally, the health department successfully prevented any unusual or dangerous epidemics of disease, while the educational department announced an expansion of schools and a reduction in illiteracy in cities and towns. The same held true in other branches of the government.

Inefficiency and the black market bore down hardest on the peripheral tribes. At each stage of the transfer of short supplies, some would be diverted from their rightful goal. This resulted in a diminishing trickle of sugar, cloth, medicines and other rationed goods. The Kurds, always chafing under what they felt had been discrimination by the Baghdad politician-merchant, protested-but to no avail. Aroused by appeals from his mountain tribesmen, Mullah Mustafa jumped bail, assumed leadership of the Barzan Kurds and in Oct. 1943 precipitated a series of incidents that led to the dispatching by the government of a punitive military expedition. The latter was mauled in unfamiliar mountain terrain and retired, whereupon the British used their good offices to try and effect a reconciliation. An armistice was patched up, which the Kurds considered a victory even though it brought about little improvement in the general situation. Two years later, in Sept. 1945, Mullah Mustafa again incited the wrath of the government, which sent in a better trained force to capture him. His guerrillas stopped the army advance, but he was abandoned by his brother-in-law, who accepted government inducements to attack him in the rear. Accompanied by more than 1,000 of his fighters he crossed into Iran, where he was temporarily billeted with neighbouring Kurds, then busy establishing the Kurdish autonomous government in Iran. He was visited by soviet agents who helped him financially and gave him gifts of small arms before their departure. On Dec. 15, after having announced a Kurdish independent state based on the soviet model, he was captured by Iranian government forces. He was dressed as a general in the soviet armed forces and his followers also were outfitted as soviet

Iraq joined the Allies by declaring war on Germany in 1949. As a charter member of the Arab league (q.v.) Iraq showed a keen interest in and strong sympathy with Lebanon in the crisis of Nov. 1943, and later with Syria in May 1945. The Arabs of Iraq had always closed ranks with their fellow Arabs of Palestine, and as the question of increased Jewish immigration arose, the attitude of pan-Arabs became increasingly belligerent. The regent, gradually assuming a more important position, made an extended trip to the United States, returning via Great Britain and Turkey in the summer of 1945. There was some alarm during the winter of 1945-46 over soviet aims and methods when soviet tanks interfered with Iranian security forces, and autonomous states sprang up on Iraq's eastern border. A wary eye, thereafter, was kept on radical groups. Iraq remained friendly toward Great Britain. although nationalistic circles began demanding treaty revision, especially when French forces evacuated Syria in April 1946 and Egypt seemed about to get terms more in line with its desires for complete sovereignty. In 1945 Iraq sent a delegation to the United Nations conference.

In its internal policy, Iraq carried on with practically the same traditions as those of 1933-36. Political parties

740 of many shades of social thinking were recognized in March 1946. Those of socialistic tinge were small and considered largely indigenous.

Iraq emerged from World War II only slightly impaired. With her small population, her vast land and water potential and large sterling credits, Iraq possessed all the essentials for a rising standard of living, but political developments continued to divert attention to affairs abroad. The turor over Zionism unseated the government on May 30, 1946. The new prime minister Arshad Al 'Umari was noted for his energy, but also for his recklessness. After a strike in the Kirkuk oil fields on July 3, he fined, suppressed and clamped down on opposition, especially any coming from socialistic groups. Then in August, it was announced that the British were replacing and strengthening their garrison near Basra in anticipation of a possible collapse of security in connection with British oil installations in southwestern Iran. There was

	Iraq: S	itatistical Data		
		1938		1943
	Value (000's omitted)	Amount or Number	Value (000's omitted)	Amount or Number
Exchange rate		1 Dinar =£1 (\$4.889)	•	1 Dinar=£1 (\$4,035)
Finance Government revenues - (including oil royalties)		.,	£13,827 (\$55,792)	
Government expenditures (excluding capital works expenditure)	£5,042 (\$24,650)		£11,596 (\$46,790)	
National debt	£1,000 (\$4,889)		•••	
Transportation Railroads	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	960 mi.* 4,000 mi.*		
Communication Telephones Telegraph lines † Radio sets		5,905 4,441 mi. 20,000		8,129‡ 5,109 mi.‡
Minerals Petroleum		32,643,000 bbl.		24,662,057 § bbl.
Crops Barley		1,254,858 tons 661,380 ,, 396,828 ,,		661,380 tons 440,920 " 385,805 "
Livestock Sheep		5,514,100 2,223,100 250,000		
Forest products Licorice root (exports only) Gallnuts		7,241 tons 573 tons		
Exports Total	£3,473	•••	£4,936	•••
Grain, pulse and flour .	(\$16,978) £1,158 (\$5,662)	290,000 tons	(\$19,917) £1,180	52,000 tons
Dates ,	£887	208,000 "	(\$4,761) £1,922 (\$7,757)	81,000 ,,
Wool (raw)	(\$4,338) £438 (\$2,140)	5,000 "	£383 (\$1,546)	3,000 ,,
Cotton (raw)	£218 (\$1,064)	4,000 ,,	£410 (\$1,654)	3,000 ,,
Total	£9,862 (\$45,770) £1,058	•••	£15,632 (\$63,074)	•••
Iron, cast iron and steel Boilers, machinery, and	£1,058 (\$ 5,171)	58,000 tons	£211 (\$852)	5,000 tons
mechanical appara-	£996	•••	£123	•••
Cotton piece goods	(\$4,869) £833 (\$4,073)	60,270,000	(\$496) £2,780	30,526,000
Sugar	£505 (\$2,470)	sq.yd. 49,000 tons	(\$11,219) £541 (\$2,183)	sq.yd. 15,000 tons
Defense Standing army personnel (including air force).		28,000	,,,,,,,,,,,	
Education Elementary schools				
(government) Students		741 94,368		
Secondary schools		14		
Students		1,904 48		
Students		10,611		
*1939. †Includes te	lephone line		§1940	. [1937.

talk of war to the east, to the west and the north. Iraq was one of the main points in the British strategic pattern covering the area stretching from the Adriatic sea to the Indus river. However, two events greatly eased the tensions just before the end of the year. Premier 'Umari was forced to resign, and the aged Nuri as Said, having served in 19 former cabinets, accepted his 9th term as premier. This relieved internal stresses while collapse of the sovietorganized regime in Iran on December 9–11 had a calming effect on international relations.

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Ireland

See EIRE.

Ireland, Northern

Although an integral part of the United Kingdom, Northern Ireland acquired its own parliament for the control of the services transferred to it under the Government of Ireland act, 1920. Other services, including defense, foreign relations, inland revenue, customs and excise, and the post office, were reserved to the imperial parliament, to which Northern Ireland sent 13 members. Covering an area of 5,238 sq.mi., Northern Ireland comprises six counties (Antrim, Armagh, Down, Fermanagh, Londonderry and Tyrone) and two county boroughs (Belfast and Londonderry). It had in 1937 (official census) a population of 1,279,745. The estimated figure for 1946 was 1,332,000 (exclusive of persons serving in the forces). Chief towns: Belfast (cap., pop. 1937 census 438,086); Londonderry (47,813). Religions of the population at the date of the census: Roman Catholic 428,290; Presbyterian 390,931; Church of Ireland (including Church of England and Episcopal Church of Scotland) 345,474; other and not stated denominations 115,050. Governors: the duke of Abercorn (Dec. 8, 1922-Sept. 6, 1945); Vice-Admiral the Earl Granville (after Sept. 7, 1945). Prime ministers: Viscount Craigavon of Stormont (d. Nov. 24, 1940); John Miller Andrews (Nov. 26, 1940-May 1, 1943); Sir Basil Stanlake Brooke (after May 2, 1943).

Pre-war Problems.—Economic problems occupied a fore-most place in the public mind in 1937 and 1938. In June 1937 a bill was passed with the object of stimulating the establishment of new industries. This was the forerunner of post-war measures which resulted in the introduction of numerous manufactures of a lighter type as a supplement to Northern Ireland's basic industries—linen manufacture, shipbuilding and agriculture. By the end of 1937 the volume of employment was diminishing owing to the economic slump in the United States—one of Northern Ireland's best customers for linen goods—the dislocation of far eastern markets by the Sino-Japanese war, and the increasingly menacing situation in Europe. To alleviate the unemployment situation, parliament encouraged local authorities to undertake works of public utility.

During 1937, 44 schemes were approved by the ministry of labour at a capital cost of £900,000. In connection with the British government's rearmament program orders had been received by March 1938 for the construction in

Belfast of two cruisers and an aircraft carrier. These were the precursors of a large number of naval and other vessels built in Belfast during World War II.

On Dec. 6, 1938, the king's speech to parliament recalled a notable program of social legislation carried through in the previous session. Among the more important measures were a factories act, which made improved provision for the health, safety and general welfare of industrial workers, and a holidays-with-pay act.

After the coronation of King George VI in 1937, the king and queen paid a visit to Northern Ireland which called forth many public manifestations of loyalty and affection. But war clouds were already gathering ominously in Europe and on March 22, 1938, the Northern Ireland house of commons, on the initiative of the prime minister, Viscount Craigavon, adopted a motion assuring the British premier that "should any crisis arise he can confidently rely upon the people of loyal Ulster to share the responsibilities and burdens with their kith and kin in other parts of the United Kingdom and the empire to the utmost of her resources." This pledge was fully redeemed during the six years 1939–45.

The latter part of 1938 saw the first stages of plans for air raid precautions and civil defense which were later to be extensively developed. Discussions took place in the early part of 1939 between the British and Northern Ireland governments on the question of compulsory military service. Lord Craigavon strongly represented to Neville Chamberlain that the people of Northern Ireland desired to be placed under the same obligations as their fellow-citizens in the rest of the United Kingdom. Ultimately the British authorities decided that conscription should not be applied to Northern Ireland. Although, in consequence of this decision, recruiting in Northern Ireland remained on a voluntary basis, men and women came forward in large numbers and served gallantly in all branches of the fighting forces and the auxiliary services.

War Effort.—When war broke out in Sept. 1939 the Northern Ireland house of commons was immediately summoned and the prime minister announced Ulster's deter-

Funeral cortege in Belfast, Ireland, for Seán McCaughey, former officer of the outlawed Irish Republican army who died on May II, 1946 after a hunger strike in a Dublin jail. He and II other strikers demanded treatment as political, rather than treasonous offenders

mination to participate in the struggle to the utmost of its resources. Recruiting for the forces and civil defense went on apace, industry was progressively switched over to war production, and the farming community, in the first year of war, substantially exceeded the tillage "target" of an additional 250,000 ac. under food crops.

The expansion of agricultural production in Northern Ireland between 1940 and 1945 added enormously to the food supplies of the United Kingdom and so helped to defeat the axis attempt to starve the nation into surrender by means of the submarine campaign. The Northern Ireland ministry of agriculture became an extensive food production department controlling crops, livestock and other farm products. It was a huge marketing organization responsible for the purchase, sale and distribution to the retailer of most of the principal articles of food. By 1945 the ministry's financial transactions arising from its war services had reached an annual total of more than $f_{44,000,000}$. The tillage area was progressively increased until it reached approximately 900,000 ac. Simultaneously the cattle population was increased: the figure in 1944 was 885,000, compared with 753,000 in 1939. In addition home-grown supplies of flax, the raw material of the linen industry, were increased sixfold. The area under flax in 1944 was 124,000 ac. During 1945, 156,590 fat cattle, a record number, were shipped to Great Britain to help to maintain the meat ration there. The. value of these cattle exceeded $f_{4,822,500}$. The number of fat sheep sent was 17,158, value £56,047. Great Britain received from Northern Ireland in 1945, 270,000,000 eggs, valued at £3,750,000. Large supplies of milk from Northern Ireland helped toward meeting the shortage in Great Britain during the winter months. The 1944-45 figure of 24,000 gal. per day went up to 40,800 gal. per day in 1945-46. Potato shipments were no less remarkable. The figures for 1945 were: ware potatoes, 117,900 short tons, value £750,000; seed potatoes 83,195 short tons, representing another £750,000. Although pig production had to be cut down during the war owing to the shortage of feeding stuffs, bacon and hams valued at £140,352 were shipped to Great Britain in 1945.

By skilful organization and co-ordination Northern Ire-



land's war effort on the industrial front was carried to a high degree of efficiency. In the Belfast shipyards a vast program of new construction, conversion and repair work was carried out. No fewer than 170 warships of various types were built—aircraft carriers, cruisers and a great variety of other craft. Side by side with this activity the construction of refrigerated cargo liners and tankers proceeded apace. One of the most striking examples of conversion and repair work was the virtual rebuilding of the famous liner "Georgic," which was extensively damaged in the middle east in July 1941, and which was transformed in Belfast from a sadly battered vessel into a luxuriously appointed troopship.

Northern Ireland's aircraft factories poured forth a constant stream of bombing planes and flying boats. Some 1,500 heavy bombers were built and 110 Sunderland flying boats. The engineering industry made its impressive contribution in the form of tanks, guns and ammunition. In the textile factories more than 200,000,000 yd. of cloth were produced for the services and 90% of the shirts required for the forces were made in Northern Ireland. Two million parachutes were produced for the royal air force. The Belfast ropeworks manufactured one-third of the ropes produced in the United Kingdom for war requirements.

Strategically Northern Ireland was of the highest importance to the defense of the United Kingdom and to the successful waging of the battle of the Atlantic. Ports in Eire were not available for use by the royal navy, but the harbours of Belfast and Londonderry accommodated ships of the British, U.S. and Canadian fleets. Just before D-day quite an "armada" of warships and troopships sailed from Belfast lough for the invasion of Normandy. Northern Ireland was studded with aerodromes used by British and U.S. air units, and seaplanes based on Northern Ireland's inland waters maintained their daily and nightly patrols hundreds of miles out over the Atlantic.

Northern Ireland, indeed, came to be known throughout the world as "the British bridgehead" and "the Gibraltar of the north." Hundreds of thousands of British and U.S. troops received their training there. The first contingent of U.S. troops to enter the European theatre of operations landed in Belfast in Jan. 1942 and were welcomed by the governor, the secretary of state for air, representatives of the government of Northern Ireland and senior officers of the British fighting services.

In spite of its geographical position Northern Ireland did not escape the attentions of the German air force. The heaviest raids were on the city of Belfast—in April and May 1941—more than goo people being killed and some thousands injured.

The government of Northern Ireland maintained the closest touch with the imperial government on matters of policy and administration relating to the prosecution of the war. Similarly the Northern Ireland government worked in intimate co-operation with the British and U.S. forces through the service chiefs stationed in the country during the war years. In 1942 the king and queen again visited Northern Ireland, and on that occasion saw British and U.S. troops in training and Ulstermen and women at work in factories and shipyards.

Northern Ireland's war effort was officially acknowledged on May 6, 1943, by a letter from Winston Churchill, then Britain's prime minister, to J. M. Andrews, the Northern Ireland prime minister, in which he wrote of Northern Ireland's loyalty and devotion. In June 1945, in a letter

to Sir Basil Brooke, who had succeeded Andrews, he again thanked Ulster for its contribution to the war effort and referred to its loyalty and courage.

In July 1945 the king, the queen and Princess Elizabeth paid a victory visit to Northern Ireland. The king delivered a message to both houses of parliament and held an investiture in the great hall of parliament buildings. Princess Elizabeth revisited Northern Ireland in March 1946 to launch the aircraft carrier "Eagle" at the Belfast shipyards.

Finance and Trade.-To understand developments in Northern Ireland's finance during 1937-46, some basic facts in the financial relationship between Great Britain and Northern Ireland require explanation. Most of the taxation levied in Northern Ireland went direct to the British treasury. From the product of this taxation were deducted the amount of "transferred" expenditure (covering the whole field of social services, maintained in parity with Great Britain's standards, education, law and order, agriculture and fisheries, harbours and commercial services) and the cost of "reserved" services administered in Northern Ireland. The balance was retained by the treasury and was known as Northern Ireland's "imperial contribution." Between 1921-22 and 1938-39 this contribution averaged £1,616,000 per annum. By reason of the enormous increase in taxation for war needs the amount of the contribution rose to record figures, as the following details

Year												Amount of contribution
1939-40												
1941-45 (average) .	٠	٠.		٠			٠					25,630,000
1945–46 (provisional)												
1946-47 (estimated) .			_							_	_	22.500.000

The volume of Northern Ireland trade is shown by the following figures:

Year										Imports	Exports	Total Trade
1937										£57,115,000	£54,358,000	£111,473,000
1938										54,385,000	51,061,000	105,446,000
1939		٠			٠					58,683,000	58,290,000	116,973,000
1940				٠						78,338,000	79,632,000	157,970,000
1941						٠				81,079,000	81,681,000	162,760,000
1942	٠	٠							٠	102,647,000	87,379,000	190,026,000
1943			٠							101,584,000	99,678,000	201,262,000
1944	٠						٠	٠		103,881,000	111,133,000	215.014.000
1945	٠	٠	•	•						107,100,000	113,206,000	220,306,000

In considering the significance of the above table two factors should be borne in mind: changes in money values and the contrast between peacetime and wartime commerce during the decade under review.

Post-War Developments.—While the war was still in progress the Northern Ireland cabinet had been engaged in preparing schemes of reconstruction and development. In the latter part of 1945 and during 1946 the first fruits of these plans appeared. A long-term housing program was begun and a statutory body known as the Northern Ireland Housing trust made encouraging progress with the erection of houses for letting to the workers at reasonable rents. Steps were taken toward the expansion and modernization of the health and hospital services. A large-scale campaign against tuberculosis began in 1946 and a single authority for the whole of Northern Ireland was set up to combat the disease.

Many new industries established with state assistance under recent legislation began to operate, and others were being expanded. On May 23, 1946, the minister of commerce stated in parliament that the various projects so far dealt with would provide employment for some 14,000 workers.

Family allowances benefiting 100,000 families came into operation in Aug. 1946. Social services were extended and economic standards raised. A bill introduced in Oct. 1946 proposed far-reaching reforms in the educational

system. Other schemes taken in hand related to agricultural development, road and rail transport and electricity supplies.

In 1946 increasing attention was being paid to the welfare and training of youth. Many voluntary organizations engaged in this work received substantial grants from the ministry of education through the Northern Ireland Youth committee. (B. S. B.)

Irish Free State

See EIRE.

Iron and Steel

At the end of the decade 1937-46, production data were still lacking for the war years in many of the axis and occupied countries, so that as yet world totals were at best no more than estimates. The munitions programs of World War II demanded steel not only in greater quantities than ever before, but in quantities greater than had ever been contemplated as possible needs in any future war. The demands for steel were so great that they could not be superimposed on normal requirements, and as a result civilian requirements were cut to the irreducible minimum in order to satisfy essential war needs. At the beginning of the decade, anyone suggesting that in the event of another war, steel supplies would be so "tight" that the few tons needed to make hairpins would be restricted, would undoubtedly have been subjected to universal ridicule. Yet just that, and other things considered equally improbable, actually happened.

With so large a share of the war needs supplied by cuts in everyday civilian uses, the expansions in output required for the war were greatly reduced, and available figures indicated that world totals did not increase as much as might be expected. It was true that the war peak of steel production in the United States was nearly two-thirds greater than in 1937, but increases of that magnitude were not made in any other country. In fact, increases elsewhere than in the United States appear to have been relatively small and few in number, and considering the decreases in output that must have followed German occupation of practically all the steel-producing countries of continental Europe; the cumulative decrease was likely to offset a large part of the increases elsewhere. So far as could be determined, net increases were of the order of 15% to 20%, with the peak of production in 1942.

The amount of iron and steel produced outside the United States and Europe remained relatively small. In 1937 the United States produced 36% of the total pig iron, Europe 56%, and the rest of the world 8%. The advent of

the war called for increased supplies, but few European countries were able to meet the call. Two of the largest producers, Germany and Great Britain, were dependent on imported ores, the former for two-thirds of the supply, and the latter for one-quarter. For a time Germany was cut off from all imports except from Sweden, but later was able to obtain ores from the occupied countries. In Great Britain the nearby Swedish ores could no longer be obtained, and imports from more distant sources were hampered by shipping difficulties. Hence there were declines in output in the countries exporting ore. Eventually Germany, through occupation or domination, secured control of the iron and steel industry of most of continental Europe, but under conditions of forced labour in the occupied countries, outputs could not be kept up to prewar levels.

Iron Ore.—In Table I¹ there are presented the available production figures for all countries which at any time since 1937 had attained an output of 1,000,000 tons or more of iron ore. Production outside of these countries was small; those listed accounted for about 95% of normal output.

The most notable feature of the production table is the reduction of output in countries exporting ore, and in the occupied countries. Outside the United States, decreases and increases almost balanced, so that the over-all increase was determined by the United States.

International shipments of iron ore were resumed shortly after the close of the European phase of the war. The first shipments of Swedish ore to England were made in July 1945, and the first cargo of Chilean ore was received in the United States in August. Algeria showed a marked increase in activity in 1945, while Spanish Morocco was slower in recovery, and Tunisia showed little change. The Spanish output and exports were less in 1945 than in any of the preceding war years. In 1946, shipments to the United States were resumed from Sweden and Cuba. However, the main feature of the U.S. ore imports was the growing importance of Canada.

United States.—Supplementing the data in Table I, iron ore production in the United States decreased from 98,981,560 short tons in 1945 to 79,759,680 tons in 1946 (preliminary estimate).

Canada.—After the opening of the Steep Rock deposit in western Ontario, the iron ore output of Canada more

¹Data for this and the other tables of world production were necessarily accumulated from a number of different sources, some of which did not agree, but an attempt was made to produce a table as near consecutive as possible. Data were derived from the publications of the U.S. Bureau of Mines, the Statistical Yearbook of the League of Nations, the Statistical Annual of the American Iron and Steel Institute, and Iron Age.

Table I.—World Production of Iron Ore											
	193 7	1938	Thousands of s 1939	hort tons) 1940	1941	1942	1943	1944	1945		
United States	80,745.7 6.2 1,802.9	31,861 5.8 1,881.8	57,939.5 123.6 1,851.4	82,539.4 414.6 1,689.8	103,498. 7 516 1,082.1	118,189.3 545.3 1,332.9	113,397.6 641.3 607.9	105,411.8 553.2 520.1	98,981.6 1,134.8 1,102.8		
Chile	1,642	1,773.1	1,792.9	1,928.8	1,876.9	450.4	330	743.5	1,041.6		
Czechoslovakia	2,024.4 41,710.6 10,554.9 2,077.5 15,920.9 1,099.9	36,527.5 12,057.9 2,866.1 13,282.4 1,091.3	1,578.5 2 13,279.2 3,244.9 16,227.6 1,045	1,735 14,033.6 17,867.4 3,447 20,029.5 1,300	1,859.6 11,651.9 17,037 2,781.1 21,076.3 1,477.5	1,726.1 14,062.8 14,576.4 2,885.4 21,584.7 1,196	18.606.1 ? 20,568	10,213.2 ? 16,688.4	8,624.6 2 2 15,400 54.3		
Luxembourg Norway Spain Sweden U.S.S.R.	8,560.9 1,111.4 1,399.6 16,482.4 28,700	5,666.6 1,571.1 2,805.3 15,353.1 29,244.1	2,817.5 2,817.6 15,197.8 30,300	2,218.1 12,450.6 25,068.9	7,661.5 624.5 1,894.9 11,605	5,629.6 313.6 1,770.5 10.722.5	241.4 1,750.2 11,927	291.5 1,662.9 7,995.5	2 2 1,275.3 2 2		
India	1,178.5 228.7 1,860.9 662.7	3,072.9 1,171.6 1,004.2	3,490 1,125.5 2,195.7 1,272.8	3,475.8 1,181.7 2,065.6 1,313.5	3,577.8 1,864 ? ?	3,603.6 2,511.1 ? ?	2,973.8 2,600.4 ? ?	3,733.5 ?	ŝ ŝ		
Algeria	2,675.5 1,570.5	3,422.7 1,478.9	3,241.1 1,144.4	1,774.4 677.3	349.4 611.6	337.9 603.4	202.4 603.6	868.4 761.6	? 826.9		
Australia	2,095.4 233,700	2,520.6 178,600	2,884.7 224,900	2,595.4 233,700	2,584.9 256,800	2,584.9 270,000	2,674.9 ?	2,446.7 2	ŝ S		



than doubled. However, since this new production was exported to the United States, Canadian furnaces still imported the bulk of their ore supply from the United States.

Pig Iron.—Table II presents production data from all countries which at any time after 1937 had attained a pig iron output in excess of 1,000,000 short tons. The countries listed normally accounted for about 95% of the total output.

While pig iron production in the United States during the war years increased by one-half over the prewar rate, world output increased only a small degree. Difficulties in maintaining ore supply and in keeping an adequate labour force, especially in the German-occupied areas, led to declines that largely offset the expansion in the United States.

United States.—Blast furnace production declined 13% in 1945 as compared with the peak year of 1944. Normal production in 1946 was interrupted by steel and coal strikes, with the result that it fell to 45,378,530 short tons for the 12-month period. Demand during the year was well above production, and the reconversion program was hampered by the shortage.

Canada.—Blast furnace output in Canada was doubled during the war years, reaching a peak in 1942, and declining 10% by 1945. Output in 1946 dropped to 1,520,753 short tons, about 23% less than in 1945.

Great Britain.—While the British production of pig iron declined somewhat during the war years, the results could be considered good in view of the difficulties of securing iron imports, and the shortage of coal. It was notable that production increased in 1945, when most other countries were on the decline. Production totalled an estimated 8,779,000 short tons in 1946, about a 10% increase over the average rate of 1945.

the average rate of 1945.

Continental Europe.—The various European producers of pig iron may all be classed in one group, as all eventually suffered from partial or complete German occupation or domination. Even though blockaded from imports from without, the German-controlled areas had a self-contained potential production capacity that was formidably large, but labour was short at best. Forced labour both in the occupied areas and in Germany itself was notably inefficient, and outputs suffered accordingly. Then, as countries were liberated from the occupation, conditions became even more disorganized than before, and production in some areas was almost stopped.

The mills at Pittsburgh, like those of all major U.S. steel producing centres, began to operate on night schedules in the summer of 1939 to fill the rush of defense orders

As indications of the rate of postwar recovery, partial data for 1946 were reported so far as available.

In Belgium, production increased from 155,500 short tons in Jan. 1946 to 189,600 tons in June, with a total of 1,026,250 tons for the half year. In Czechoslovakia, production increased from 61,700 short tons in Jan. 1946 to 87,000 tons in June, with a total of 469,000 for the half year.

France's production increased from 213,000 short tons in Jan. 1946 to 335,000 tons in July, with a total of 1,804,000 tons for the seven months.

Conditions in Italy were still almost completely disorganized, with production even lower than in 1945. Luxembourg's production, however, increased from 84,000 short tons in Jan. 1946 to 137,000 tons in July, with a total of 754,000 tons for the seven months.

Production in Poland in the first five months of 1946 was 315,000 short tons, an average of 63,000 tons monthly, as compared with 81,600 tons monthly in 1939. In Sweden, production in the first half of 1946 dropped 5% below the average rate for 1945.

Steel.—So far as data were available, Table III presents steel production in all countries having an output over 1,000,000 short tons a year. The minor producers not listed, including Austria, Hungary, Spain, Finland, Rumania, Yugoslavia, South Africa, China, Brazil and Mexico, accounted for only about 2% of the total.

While the world totals were yet not definitely known, it was apparent that the increase during the war years was not large.

The 58% increase in the United States was largely offset by decreases in the European war zone, where shortages of ore restricted the output of pig iron necessary for the production of steel.

United States.—In order to assure a greater output of steel for war uses, production capacity was enlarged all along the line—ore, pig iron and steel. The record of the progress is shown in Table IV. In connection with the data on steel, it is important to note that while the figure usually emphasized is gross production of ingots and castings, the figure that really counts is the shipments of finished steel to consumers. The processing operations in the conversion of raw ingots into finished steel result in the removal of from one-quarter to one-third of the original

tonnage as scrap, with a corresponding reduction in the tonnage of finished steel. This scrap is remelted in subsequent operations, and so is not lost, but the constant reworking of this large volume of plant scrap inflates the apparent output, when measured in terms of raw steel, rather than as finished steel.

As will be noted from Table IV, there was a decline of 11% in steel production in 1945, and it was anticipated that something near this same level of operations would need to be maintained in 1946, but production was cut in January and February by a steel strike, and again in May and November by coal strikes. As a result the year's total was 66,590,604 short tons, a decline of about 16% below 1945. This restriction of output led to a shortage of supply throughout the year, and greatly hampered the return to normal industrial operation.

Canada.—Steel production in Canada more than doubled during the war years, reaching a peak in 1942, and declining 7% by 1945. In 1946, production was 2,334,631

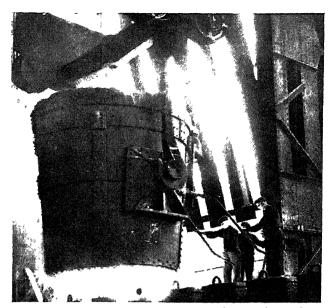
short tons, about 19% less than in 1945.

Great Britain.—Considering the difficulties in maintaining ore supplies and pig iron output, steel production in Great Britain was kept at a good level during the war years. There was a marked postwar improvement, with an estimated 14,372,000 short tons in 1946, or about 9% over the average rate of 1945.

Continental Europe.—With all of the continental steel producers eventually coming partly or wholly under German control, either by occupation or domination, steel output followed the trend established by ore supplies and pig iron output. Bad as conditions were under German control, in most cases they became worse with liberation, and for a period of several months the basic industries were almost completely disorganized.

The following data on operations during the first half of 1946 show the extent to which reorganization was put

Table 11.— World Production of Pig Iron and Ferroalloys (Thousands of short tons)												
	1937	1938	1939	1940	1941	1942	1943	1944	1945			
United States	41,611.8 1,098.6	21,467.2 ° 852.7	35,628.5 932	47,428 1,458.5	56,721.2 1,726.4	60,975.5 2,184	62,797.8 1,955.4	62,897.3 2,035.1	54,956.4 1,964.9			
Belgium	4.192.9	2,674.3	3,371.6	1,972.9	1,567.6	1,399.4	1,797.4	792	791.9			
Czechoslovakia	1.846.4	1,360.2	1,100	` ?	ş	7	\$	1,700	485			
France	8,725.9 17,592.7	6,681.4 20,498.6	8,21 <i>7.7</i> 22,377	4,960 23,150	1,658	1,748	2,346	1,216	1,306			
Germany	9,512.2	7,574.5	8,937.6	9,189.6	8,279	8,516.5	8,049.3	7,544.9	7,960 3			
italy	953.8	1.023.8	1,207.9	1,236.6 1,100	1,223.5	980	710	254	73			
Luxembourg	2,769.6 16,000	1,653 16,733	1,985 16,750	16,750	14,450	7,800	2,500 2	1,480	357			
India	1,824.9	1,745.3	1,967.8	2,233.5	2,251	2,049.3	1.958.7	1,587	1,495			
Japan	3,031	3,086	3,300	3,300	*	3	, ŝ	, ŝ	2			
Australia	1,023 114,884	1,041.2 91,407	1,23 <i>7.</i> 1 112,467	1,3 <i>57.5</i> 118,713	1,652.8	1,744.5 ?	1,557.1	1,462	š 3			
Total	-	-	112,407	110,713	•	•	ī	*	•			
Table III.— World Production of Steel (Thousands of short tons)												
11 10 100 100	1 <i>937</i> 56,636.9	1938 31,752	1 <i>939</i> 52.798.7	1940 66.982.7	1941 82.839.3	1942 86.031.9	1943 88.836.5	1944 89.641.6	1945 79,701.6			
United States	1,514.6	1,262.9	1,551.1	2,253.7	2,712.2	3,109.9	3,004.1	3,024.4	2,881.3			
Belgium	4,265.2	2,518.9	3,428.7	2,087.8	1,790.2	1,525.6	1,839	701	807			
Czechoslovakia	2,555.3 8.730.8	1,941.3 6,806	9.407	å,100	1,600	3 500	ş 2,566	2,751 1,402	1,045 1 <i>.7</i> 72			
Germany	21,880.6	25,621	28,300	28,150	25,800	2,500 31,700	33.700	28,500	5,500			
Germany	1 <i>4,5</i> 19.7 2,300.5	11,641.1 2.559.7	1 <i>5</i> ,11 <i>9</i> 3,005	14,500 2,800	13,700	14,300	14,590	1 3,5 98 1,190	13,228 450			
Luxembourg	2,767.2	1,583.5	2,016	1,450	ģ	2	2,368	1,389	291			
Luxembourg	1,600.3 1,218.7	1,699.8 1.071.5	1,345	? 1,262,2	240 1,274.7	262 1,353.6	284 1,338.2	184 1,319.9	595 1 336			
Sweden	19,649.1	20,335.3	1,269.8 20,719	21,800	23,100	1,555.0	1,330.2	1,317.7	1,336			
India	1,761	1,795	2,000	2,200	3	3	1,521	1,468	1,415			
Japan	6,405.8	6,459.4 1,333.8	7,055 1,349.2	7,000 1,482.6	7,000 1,887.2	8,700 1,990.7	13,000 1,912.5	15,000	5,000			
Australia	1,209.2 1 <i>5</i> 0,000	120,000	152,000	159,000	172,000	184,000	177,000	173,000	134,000			
Note.—Figures in even hundreds or thousands	are estimates.	•				•						
	Table I	V.—Data of th	e Iron and Ste	al Industry in th	e United States	•						
		-	Thousands of sl									
COUNT OF	193 <i>7</i>	1938	1939	1940	1941	1942	1943	1944	1945			
CRUDE ORE Production	3	ş	?	7	120,645.9	141,710.4	134,036	.124,342.6	119,069.9			
Open-pit	54,468 *	16.274.4*	36,682.2* 21,257.3*	55,542.3* 26,997.1*	88,971.1 31,674.8	104,041.5 37,668.9	97,271.8 36,764.2	92,281.2 32,061.3	88,407.4 30,662.5			
Underground	26,276.8*	15,586.5*	21,237.3	20,777.1	31,074.6	142,010.4	132,857.1	125,522.1	119,323.6			
USABLE ORE												
Production	80,744.7 81,029.5	31,861 29,602.6	57,939.5 61,406.4	82,539.4 84 221 9	103,498.7 104,220.5	118,189.3 117,951.3	113,397.6 110.675.6	105,411.8 105,890	98,981.6 98,090.6			
Imports	2,735.2	2,377.2	2,702	84,221.9 2,776.8 1,552.7	2,625.3	819.1	447	519.1	1,336.7			
Imports	1,415.8 70,196.7†	662.5 32,373.8†	1,184.2 59,83 3 †	1,552.7 89,990.8†	2,136.5 105,733.2†	2,817.2 116,542†	2,715.8 112,511.8	2,417.4 111,935.6	2,310.7 96,497.5			
Consumption	70,1902	32,073.01	37,0301	07,770.01	1000 00.21	110,042	112,011.0	111,700.0	,0,4,,.0			
Production	40,482.5	20,812.2	34,805	46,203.9	55,085.4	59,077.6	60,765.2	61,003.8	53,224.2			
Shipments	39,451.2 38,143.3	20,386.7 20,724.9	35,942.5 35,232.7	46,958.9 46,185.8	55,223.6 56,185.5	59,100.6 59,042.9	60,787.2 60,315.2	60,996 60,951.6	53,265.4 53,187.2			
FERROALLOYS	30,140.0	206 241	00,200	,	00,100.0	,-		00,,01.0	•			
Production	1,129.2	654.9	823.4	1,224.4	1,636.1	1,898.3	2,033	1,893.9	1,732.4			
Shipments	1,087.1	519.8	942.1	1,292.7	1,719.8	1,869.2	1,995.2	1,861	1,661.7			
STEEL Capacity	78,148.4	80,185.6	81,829	81,619.5	85,158.2	90,293	90,636	93,564.6	95,505			
Production	56,636.9	31,752	52,798.7 47,828.7	66,982.7 60,882.9	82,839.3 73,312.9	86,031.9 75,183.1	88,836.5 77,207.9	89,641.6 79.168.3	79,701.6			
Basic open-hearth	51,265.2 559.8	28,775 305	581.1	690.3	1,076.8	1,318.9	1,413.9	1,195 <i>.7</i>	71,069.9 869.7			
Bessemer	3,863.9	2,106.4	3,358. <i>9</i> 1,029.1	3,708.5 1,700	5,578.1 2,869.3	5,553.4 3,974.5	5,625.5 4,589.1	5,039 9	4,305.3			
Electric	947 1	565.6 ‡	0.9	1	2.3	2	0.1	4,237.7 ‡	3,456.7 ‡			
Shipments	31,801.6	17,608.1	32,517.2	45,850.8	62,484.2	60,464.8	59,905.6	60,352.7	57,242.2			
*Usable ore, not crude. †Consumption for p	oig iron only.	‡Less than	50 tons.									



British mill workers preparing to pour molten steel into huge moulds. Many units of the British industry were modernized to meet wartime demands for iron and steel used in shipbuilding, bridges, munitions and general construction work

into effect, and the steel industry put back on a production basis.

Production in Belgium increased from 60,000 short tons a month at midyear of 1945 to 170,000 tons in Jan. 1946 and 200,000 tons in June, with a total of 1,110,000 tons in the first half of the year.

Czechoslovakia's production increased from 35,000 short tons in June 1945 to 162,000 tons in May 1946, with a total of 870,000 tons in the first five months of 1946.

Output in France increased from 60,000 short tons monthly in Jan. 1945 to 255,000 tons in Jan. 1946 and 415,000 tons in July, with a total of 2,373,000 tons in the first seven months. In Luxembourg, production increased from 4,000 short tons in Jan. 1945 to 77,000 tons in Jan. 1946 and 130,000 tons in July, with a total of 920,000 tons in the first seven months of 1946.

Poland's production was revived early in 1945, and by the end of the year had reached 81,500 tons monthly. In 1946, output rose to 110,000 tons, with a total of 638,000 tons for the first five months. In Sweden, production in the first half of 1946 was 694,000 short tons.

Production in the British zone in Germany was 1,100,000 short tons in the first half of 1946. (See also Business Review; Metallurgy.) (G. A. Ro.)

Iron and Steel Institute, American

See Societies and Associations.

Ironside, 1st Baron

Baron Ironside (Field Marshal William Edmund Ironside) (1880—), British soldier, was born May 6, 1880. He entered the royal artillery in 1899 and saw active service in the Boer war. At the outbreak of World War I he was a general staff officer, third grade, and by 1918 had advanced to brigadier general in command of the 99th infantry brigade in France. Shortly before the armistice he was transferred to Archangel, Russia, as commander in chief of the Allied troops there. A full general in 1936, he was appointed commander in chief of the eastern command, and in 1938 became commander in chief of British forces in the middle east. He was named governor and

commander in chief of Gıbraltar in Oct. 1938 and British inspector general of overseas forces in May 1939. At the start of World War II, he was chief of the British imperial general staff, but was replaced on May 26, 1940, after the German break-through in Flanders, and received command of the home forces. He was made a field marshal in 1940 and was created baron in Jan. 1941.

Irrigation

Shortly after the opening of the decade 1937–46, most of Europe and parts of Asia were in armed conflict and consequently engaged in destructive rather than constructive activities. Late in 1941, about the mid-period of this decade, all of the important nations of the world were drawn into war, resulting in almost complete cessation of civil improvements and the initiation of programs of production of the implements and supplies necessary in waging war. Therefore, fully seven of the ten years covered were devoted by each of the civilized nations principally to carrying on only such expansions as would produce larger yields of food and fibre to supply and maintain their armed forces, their allies and the life of the civil population.

U.S. Irrigation.—During the summer of 1936, severe drought had prevailed over the great plains area and part of the western United States. Areas protected by adequate water storage reservoirs and canal systems, however, suffered little. In many areas dependent on dry farming, more than 85% of the taxes were in default, while adjacent irrigated lands were practically free of tax delinquencies. In 1937 the U.S. bureau of reclamation started the fiscal year with its storage reservoirs generally filled and the lands of the federal projects amply protected against water shortages. Lake Mead, the reservoir created by the construction of Boulder dam, continued to fill, and at the end of the fiscal year 1936 contained 15,000,000 ac.-ft. or nearly one-half of capacity. Sufficient water was in reserve to serve irrigators of the Yuma federal reclamation project and the Imperial valley and other downstream irrigation projects for three years. The bureau of reclamation had 35 projects in 13 western states under construction during 1937. The major project of the bureau, then under construction, was the Grand Coulee dam of the Columbia basin project. The Bartlett dam on the Salt river project, Fresno dam on the Milk river project, Grassy lake and Crosscut dams on the Upper Snake river project, Boca dam on the Truckee river storage project and Marshall Ford dam on the Colorado river, Texas project were also under construction by the bureau during 1937.

During the year the irrigable area of federal projects increased 72,800 ac. and the irrigated area 76,614 ac. Although unit prices were low, the grand total of crop values amounted to \$118,658,272. The acreage within federal project boundaries amounted to 1,700,969 ac.

In 1938, large-scale construction began on the great Central valley project in California, greatest of the bureau of reclamation's remedial projects and designed to alleviate critical water shortage and problems in three important agricultural areas of the state through the conservation of waste flood waters of California's major streams. Through regulation of both the Sacramento and the San Joaquin rivers the Central valley project provided adequate water to supplement the irrigation supply of a large area of highly improved orchard and farm lands in the southern San Joaquin valley; re-established navigation to Red Bluff on the Sacramento river; prevented salt intrusion in the irrigation channels of the delta of the Sacramento—San Joaquin rivers; provided supplemental water for irriga-

tion, domestic and industrial uses in the Walnut creck-Martinez area, south of Suisun bay; and made possible the development of 250,000 kw. of electric power at Shasta dam. Construction was started on the Shasta dam on the Sacramento river 14 mi. north of Redding, Calif., to be 620 ft. high above foundations, 3,500 ft. long and to contain 5,610,000 cu.yd. of concrete. The reservoir created by Shasta dam in the Sacramento, Pit and McCloud rivers had a capacity of 4,500,000 ac.ft. of water.

Rapid progress was also made on the All-American canal of the Boulder canyon project. All sections of the main canals and all important structures were either completed or under construction at the end of the fiscal year. Imperial dam and desilting works at the head of the All-American canal were virtually completed. In Nov. 1938 work was started on the Green Mountain dam and power plant of the Colorado-Big Thompson project in Colorado. The dam site was located on the Blue river, Colorado. This was an earth and rock-fill structure, with a maximum height of 270 ft. above the bed of the river and a crest length of 1,300 ft.; the reservoir capacity was 152,000 ac.ft. The Colorado-Big Thompson project was designed to provide a supplemental water supply for 615,000 ac. of land already under cultivation situated east of the Rocky mountains in Colorado with water collected and stored on the western slope of the mountains in the headwaters of the Colorado river. The layout provided for this stored water to be transported through the continental divide in a tunnel 13 mi. long to the headwaters of the Big Thompson river, where it would be restored for release as needed for irrigation.

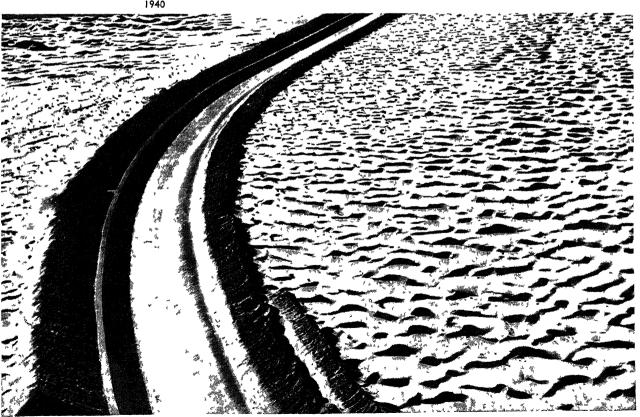
On the Central valley project, Calif., the bureau of reclamation started construction of the Friant dam on the San Joaquin river, designed to be 320 ft. high, 3,430 ft. long and to create a reservoir of 520,000 ac.ft. capacity. Also on

Aerial view of the All-American canal, as it appeared before it began to supply water to the Imperial valley, California, in Oct.

the Delta division of the Central valley project, the three contracts for the construction of the second and third sections of the Contra Costa canal and four pumping plants were completed. The 80-mi. All-American canal was completed. This canal, with its 130 mi. Coachella branch, carried water to irrigate 1,000,000 ac. of land in the Imperial and Coachella valleys of southern California. Reservoirs of the bureau of reclamation at the close of the fiscal year 1939 had a combined capacity of 51,215,000 ac.ft. Also at the close of the year it was operating 24 power plants in connection with its irrigation operations and had sold 3,211,355,667 kw.hr. resulting in a gross return of \$7,866,-994. There was some increase in the area in cultivation, from 3,040,695 ac. to 3,078,072 ac., but nearly all the increase of 37,377 ac. resulted from the addition of the Burnt river and Stanfield projects in Oregon and the Humbolt project in Nevada which appeared in the bureau's crop tabulation for the first time.

By 1940, the bureau was prepared to serve irrigation water to 4,168,168 ac.—an increase of 278,628 ac. over that reported in 1939. The crop returns from the 3,316,030 ac. of land in cultivation actually irrigated in 1940 were valued at \$117,788,677. The average crop value per ac. of \$35.52 was \$1.54 per ac. less than the 1939 record. Under the construction program for 1940, operations of the bureau were to be extended to about 2,370,000 ac. of land to be brought into cultivation. The largest development in this program was the 1,200,000 ac. to be included in the Columbia basin project.

Precipitation for the water year 1940-41 was the best in a generation, so that all storage reservoirs started out with a full supply for the 1941 irrigation season. The 73 reservoirs in operation on the bureau's projects in 15 western states on June 1 contained 41,500,000 ac.ft. of water. Lake



Mead at Boulder dam on June 1 contained 28,000,000 ac.ft. and by the end of June contained more than 30,000,000 ac.ft. All 5 of the reservoirs on the Salt river in Arizona reached their maximum capacity of 1,894,000 ac.ft. contrasted with 22,000 the year before.

The final bucket of 9,926,005 cu.yd. of concrete was placed in the Grand Coulee dam in Dec. 1941. Deer Creek dam on the Provo river, Utah, was completed in Oct. 1941. Operation of the All-American canal was extended throughout the Imperial valley during the fiscal year; 81 mi. of the 131 mi. Coachella branch canal were completed and structures on 41 mi. were completed.

During the fiscal year 1942, the bureau of reclamation completed construction of Grand Coulee, Friant dam of the Central valley project, Calif.; Vallecito dam, Pine river project, Colo.; Marshall Ford dam, Colorado river project, Tex.; and the Deer Creek dam, Provo river project, Utah. Because of the war efforts of the nation, the emphasis in the fiscal year 1942 was on facilities which would produce power for war industries. Expenditures, however, were also directed toward completion of facilities which would benefit irrigation directly through additional storage, thus increasing the nation's food supply. The installed capacity of 30 power plants on the bureau's 19 projects in 11 states was practically double that of 1941. The projects constructed or served by the bureau produced crops of a value of \$272,048,516 during the calendar year 1942. This for the first time included the \$38,163,991 value of crops produced in the Imperial valley of California, wholly served for the first year by the All-American canal of the Boulder dam system. The over-all cultivated acreage rose from 3,380,460 in 1941 to 3,877,072 in 1942. Most of the increase was due to the inclusion of the approximately 411,000 ac. of the Imperial Irrigation district.

For the 1943 season, farmers of the nation diverted their efforts from the less essential to the more important food and fibre crops necessary for the support of the industrial and military activities of the United States and its allies. This was consequently also true of all farmers of the irrigated areas of the west. Record plantings of reclamation projects and consequently higher crop yields resulted. Potato yields increased by 52% over 1942, to 64,045,000 bu., beans 23% to 4,175,800 bu. over the preceding year and alfalfa for beef and dairy herds also went to a new high at 3,508,000 tons. The expansion was due both to the concentration of farmers on the more important war crops and to the increase in irrigated acreage. The 4,055,329 ac. served by bureau of reclamation facilities on 44 projects in 15 states, produced, in 1943, 10,660,000 tons of food and forage crops valued at \$388,671,000. The gross returns were 43% or \$116,622,453 greater than in 1942.

During the fiscal year 1943, Shasta dam, second largest concrete structure in the world, was completed. Construction activities were retarded on most of the bureau's projects, however, as a result of the War Production board's stop-construction order issued in the fall of 1942.

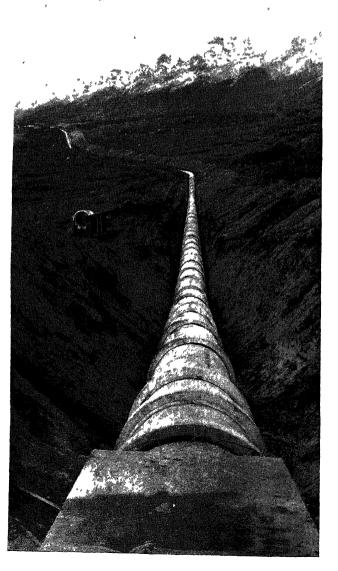
During 1944, the 13 mi. tunnel of the Colorado-Big Thompson project (Colorado) was "holed through," and work proceeded on lining it. Construction was centred on the Altus, Oklahoma and Tucumcari, New Mexico, projects in Texas. Work on the Anderson Ranch dam on the Boise project (Idaho) passed the halfway mark. The power plant at Shasta dam, completing its first full year of operation, generated 739,000,000 kw.hr. of electricity. Millerton lake, the reservoir created by Friant dam (Calif.), reached full capacity and overflowed the spillway of the dam in

late June. The reservoir in 1944 provided water for irrigating 32,500 ac. of land for crops and 110,000 ac. of pasture land for more than 140,000 head of cattle. Release of water from Shasta reservoir helped provide for irrigation needs in the Sacramento valley, enabled farmers to double the acreage of rice and helped protect \$14,500,000 worth of crops from salt water intrusion in the delta.

Power output from the plants operated by the bureau of reclamation from its great irrigation reservoirs in the west totalled almost 14,000,000,000 kw. during the fiscal year 1944–45. Most of the power went into production of planes, tanks, ships and other commodities to sustain U.S. fighting forces in all parts of the world. While devoting major attention to its programs in support of the war effort, the bureau also made substantial progress on its plans for undertaking a greatly expanded program for development of western resources during the postwar period.

Work was started in 1946 on the great Delta-Mendota canal, key link in the chain of water courses comprising the irrigation system of the Central valley project. The canal was designed as a concrete-lined river 100 ft. wide and 15

Salt Lake aqueduct, showing a pipe-line section under construction in 1945. It was part of the U.S. bureau of reclamation's Provo river project in Utah, built to irrigate lands along the eastern Salt Lake valley and to supply water to Salt Lake City



ft. deep, to carry Sacramento river water from the Delta into the depths of the San Joaquin valley, a distance of 120 mi. At Mendota it would collect in the Mendota pool, a reservoir to feed San Joaquin river lands, left short of water after the Friant-Kern canal diverted most of their water down to the dry country in Tulare and Kern counties. Work was continued on the 156 mi. Friant-Kern canal, to extend from Millerton lake, the reservoir created by Friant dam, to the Kern river near Bakersfield, Calif., providing water for irrigating 358,000 ac. of new land in the San Joaquin valley and supplemental water for an additional 374,000 ac. threatened by shortages.

Turlock Irrigation District.—The Turlock district was organized to provide irrigation, drainage and power to the area between the Tuolomme and Merced rivers in Stanislaus and Merced counties, Calif., covering about 200,000 ac. The district was formed in 1887 under the Irrigation act of California.

The irrigated area was increased from 142,756 to 153,873 ac., and the number of irrigators increased from 5,183 to 5,832 during the decade 1937-46. The average holding, excluding city and town lots, was about 30 ac. in 1946. The principal crops were alfalfa 36,290 ac., ladino clover 29,914 ac., orchard 15,304 ac., vines 14,053 ac., beans 17,000 ac. and grain 19,000 ac. There was not much variation in the crop acreage, except that ladino clover had increased from 4,248 to 29,914 ac.

Irrigation water diverted from the Tuolomme river into the main canal of the district increased from a total of 455,118 ac.ft. for the season of 1937 to an estimated 588,295 ac.ft. for 1946. Expenditures for irrigation canal enlargement including concrete lining amounted to \$760,000 during the 10 years.

The drainage system controlling the ground water level in the district comprised 146 deep well pumping plants and some open ditch drainage at the end of the decade. The capacity of the pumps varied from 900 to 2,200 gallons per minute; the average depth of well was 178 ft. The pumped water was carried by concrete pipe lines to the gravity canals where it became a part of the irrigation supply. During the 1937 season, the drainage water pumped from wells amounted to 144,013 ac.ft., as compared with 185,475 ac.ft. in the 1946 season. The number of pumps in 1937 was 125. Drainage construction costs amounted to \$162,000 during the decade.

More than 300 improvement districts had been formed in the Turlock district by 1946 for the purpose of concrete lining and piping the community ditches and for the construction of surface drains required principally in pasture irrigation. These improvement districts were formed by at least two-thirds of the landowners on any community ditch signing a petition for an improvement. The Turlock district, after a public hearing, formed the improvement district, let a contract for the work required and provided the financing. The landowners affected paid back the cost of the work in 10 annual payments with 4% interest on deferred payments. The Improvement District act of California made possible the construction of irrigation and drainage improvements by the owners of land directly benefitted, and fixed the ownership and responsibility of the improvement with these owners rather than with the Turlock district as a whole. The number of improvement districts increased from 120 to 317, the expenditure for works from \$484,218 to \$1,550,402 and the mi. of concrete lined and piped ditches from 97 to 246.

The district in 1946 generated power at two hydroelectric plants on the Tuolomme river and had long-term contracts with the Pacific Gas and Electric company of California for the sale and the purchase of power. The district's electric distribution system was extended over the area of the district and exceeded 775 mi. in 1946. In 1937 the district had 649 mi. of distribution lines. At the end of the decade, the district had 9,911 active customers as compared with 6,600 in 1937. Expenditures for construction of the electrical system during the decade amounted to \$1,632,000.

The bonded debt of the Turlock Irrigation district was reduced from \$5,402,180 to \$2,753,600 during the decade; the assessed valuation increased from \$13,393,650 to \$14,277,695 and the tax rate reduced from \$2.50 to \$1.00 per \$100 valuation. Total assets of the district amounted to \$14,000,000 in 1946 including a cash reserve of \$700,000; in 1937 they amounted to \$11,661,000. Estimated gross income for 1945 was \$35,934,965.

The Turlock, Modesto and Waterford Irrigation districts and the city and county of San Francisco claimed all of the waters of the Tuolomme river. The Turlock district entered into an agreement with the Waterford district to supply that district with water when available. Turlock and Modesto districts and the city and county of San Francisco entered into agreements of co-operation in the operation of storage reservoirs and in future developments on the stream. Storage capacity owned by the districts and the city and county of San Francisco in 1946 amounted to 750,000 ac.ft.

Work was started on the Cherry valley project (\$22,000,000). The districts and the city expected a substantial contribution to this project from the federal government for the flood control benefits which could be accomplished by operation of the five Tuolomme river reservoirs for flood control. Final regulation and control of the Tuolomme river would be accomplished by construction of the new Don Pedro project, which would add 1,000,000 ac.ft. of storage capacity, necessary to iron out the great variation in annual flows of the river.

Imperial Irrigation District.—The Imperial Irrigation district located in Imperial valley, southern California, was obtaining its entire water supply from the 80 mi. long All-American canal at the end of the decade. Complete service began in Feb. 1942. The district's irrigated area increased each year from 1937 to and including 1946, when it totalled 466,980 ac., an increase of 5,112 ac. over the area irrigated in 1945. Crop values increased annually after 1939, when the value was approximately \$30,000,000; in 1940 they were \$32,000,000; 1941, \$34,000,000; 1942, \$38,164,000; 1943, \$58,540,000; 1944, \$61,706,000; 1945, \$64,233,000 and 1946, \$70,000,000. The most significant changes in crop change was in the acreage of flax in the valley. By 1943, there were 144,000 ac. cropped to flax, and production was 1,419 carloads. This receded later to an annual average of about 55,000 ac. of flax. The 1946 March crop summary anticipated an increase in sugar beet acreage to 25,000. The industrial expansion of the valley was as follows: 1938, \$150,000 alfalfa mills; 1940, \$150,000 rice mills; 1942, \$250,000 dehydration mills; 1944, \$200,000 alfalfa mills; 1945, \$3,000,000 sugar refinery; 1946, \$2,500,ooo alcohol plant. In 1946 there were 56 produce packing sheds in the valley. The All-American canal was to allow for the eventual development of east and west mesas adjacent to the Imperial valley. In 1942 the Imperial Irrigation district acquired those areas by incorporation within its boundaries. This inclusion aggregated 270,130 ac. and brought the gross area of the Imperial Irrigation district to 882,788 ac.



Water pipe line of stone and brick under construction in Mexico during 1945. It was built to bring water from the Toluca region to relieve the shortage in Mexico City and also to provide the capital with irrigation and hydroelectric power

Merced Irrigation District.-The Merced Irrigation district in 1946 had a gross area of 164,395 ac. within its boundaries, of which 143,075 were subject to irrigation requirements. The entire water supply was from the Merced river, where the Exchequer dam provided storage of 281,200 ac.ft. at Lake McClure. The hydroelectric plant, consisting of two 15,625 kw. generators, had an average annual output of 125,000,000 kw.hr. The power so generated was sold to the Pacific Gas and Electric company at the switchboard. From 1937 to 1946, the actual irrigated area increased from 87,000 to approximately 100,000 ac. The acreage in permanent pasture increased 1,600 ac. in 1937 to 27,000 in 1946. The number of mi. of concretelined canals and pipe lines increased from 72 to 106. This left 607 mi. of unlined or earth canals in the district. The drainage wells in operation, necessary on all well-designed irrigation systems, increased from 87 in 1937 to 103 in 1946.

The district planned to concrete-line and pipe another 50 mi. of its canals within 5 years, to install about 25 more drainage wells and replace wooden canal structures with concrete as the wooden structures wear out. There were no plans to expand the service acreage, but through better land preparation by the irrigators, concrete canal lining and installation of wells, the district hoped ultimately to irrigate 128,000 ac. The expansion would come from lands already within the boundaries of the district.

Modesto Irrigation District.—During the ten year period 1937–46, the Modesto Irrigation district did very little major construction. The principal improvements to the irrigation system were pipe lines constructed on private ditches by groups of irrigators operating as an improvement district, or individuals improving their own irrigation system. Total expenditures by improvement districts as payments to contractors amounted to \$698,000, which replaced 100 mi. of open earth ditches with 24 mi. of con-

crete-lined ditches and 76 mi. of concrete pipe lines. No data were available on the amount or cost of improvements made by individuals. During the ten year period, the Modesto Irrigation district spent \$253,000 on concrete lining of canals and laterals, and increased the length of lined canals from 33 to 51 mi. Three additional deep well drainage pumps were installed, bringing the total pump installations to 77 in operation in 1946 to help control the ground water table. Plans were made for a much expanded canal-lining program to enable the district to improve distribution of the irrigation water supply, insure against failure of canal banks and decrease maintenance costs. Very few wooden structures still remained in the canal and lateral system, and those few were being replaced with reinforced concrete as rapidly as possible. From 1936 to 1945 the irrigated area of the district increased from 68,588 to 70,759 ac. The changes in acreage of the principal irrigated crops raised in the Modesto Irrigation district from 1936 to 1945 were as follows: Alfalfa from 14,108 to 14,517 ac.; beans, 14,306 to 5,843 ac.; grain, 15,540 to 6,928 ac.; trees, 12,201 to 16,615 ac.; vines, 9,124 to 9,892 ac.; ladino clover, 1,708 to 13,998 ac.

Canada.—The greatest decline in cereal production in Saskatchewan took place in localities of low moisture and of lighter soil types. Many of such localities became partially abandoned. To prevent a widespread migration of settlers from the prairie areas, interest was increased in irrigation in western provinces, mainly in the large irrigated blocks of southern Alberta. Small individual farms were practically nonexistent.

The federal government had passed an emergency measure in 1935 known as the Prairie Farm Rehabilitation act,

but a full-scale program under it had not yet gotten under way. An intensive program was commenced in 1937. In the following ten years the federal department of agriculture, through the Prairie Farm Rehabilitation act, established a widespread program of water development and irrigation. The policy was varied. The department bore the full cost of large storage reservoirs and main canals for irrigation projects; it paid the full cost of storage projects serving communities; it paid, by grants, a share of the cost of constructing individual irrigation systems, storage dams and farm reservoirs or ponds, known in the region as "dugouts."

Through this program, the area under irrigation increased to 715,000 ac. by 1946. The full use of all this acreage was not yet attained at the end of the decade because of war problems, particularly those relating to labour and equipment. Full use of such acreage was possible in the immediate postwar period. In accomplishing this, the administration assisted in the construction of over 60 large water storage projects; 3,641 irrigation projects for use by individuals; 10,548 reservoirs for use by individuals; and 28,763 farm ponds or "dugouts." The results of the water conservation program in general, and the increase of irrigable acreage in particular, played an important part in Canada's increased production for the period 1937 to 1946. The results also had a very stabilizing effect upon agriculture and settlement, especially in districts where conditions had become unstable during the previous ten years. Farmers with an adequate supply of water became more permanent producers, and cereal production of western Canada increased greatly. In 1937, the production of wheat, oats, barley and rye amounted to a combined total of 373,897,000 bu. with a value of \$250,014,000. In 1945, the yield of these grains amounted to a combined total of 710,630,000 bu. with a value of \$543,638,000.

Continuation of this program was contemplated with a minimum objective of approximately 5,000 projects per year for the succeeding 5 years. In addition to the general program there was contemplated, if labour and material became available, the construction of several large storage reservoirs on the South Saskatchewan river and its tributaries. Completion of the contemplated program was estimated to double the existing area under irrigation, or bring it to approximately 1,500,000 ac.

Australia.—In the 1937-38 annual report of the State Rivers and Water Supply commission (Victoria) it was reported that the Red Cliffs and Merbein Irrigation and Water Supply districts were supplied with water from the River Murray by means of high-lift pumping plants, the station at Red Cliffs having the greatest capacity of any pumping station in Australia. Irrigation water pumped for Red Cliffs during the year amounted to 36,299 ac.ft. and for Merbein 28,951 ac.ft., these volumes being greater than the quantities for the previous year, and also in excess by some 5,000 ac.ft. for Red Cliffs, and 2,500 for Merbein, over the yearly average pumped. No serious setbacks were felt by growers, and, from a production point of view, both districts experienced one of the best seasons for many years. A total quantity of 33,000 tons of dried fruits were harvested, 20,000 tons from Red Cliffs and 13,000 from Merbein.

The first stage of the conversion of the Merbein pumping plant from direct steam engine-driven pumping units to electric motor-driven pumps was completed and on load for the first irrigation, which commenced in Sept. 1937. This unit, comprising one-third of the total capacity of the station, was on load for the maximum hours during the season and delivered 12,548 ac.ft. of water. The elec-

trical energy supplied from the Red Cliffs generating station for this unit at Merbein was 1,562,000 units for the year.

The State Rivers and Water Supply commission report also referred to the progress made in the then proposed Murray Valley Irrigation district, which was designed to consist of an area of 400,000 ac., extending from near Yarrawonga towards Cobram, Strathmerton, Picola and Numurkah. The plans provided for diversion of waters from the River Murray through various channels and canals, the length of which was to approximate 500 mi. Progress on construction of the channels was reported for the year.

The commission's 1944-45 report on the Red Cliffs and Merbein districts called attention to the extremely dry condition for that period and reported 45,777 ac.ft. pumped on the Red Cliffs district and 43,043 ac.ft. pumped in the Merbein district. Although there was some loss of crop because of frost and labour and fertilizer shortages, these two districts produced 24,893 tons of dried fruit during the year as compared with the two previous years of 33,543 and 31,895 tons respectively. The record production for those two districts amounted to 34,000 tons in 1939-40. The 1944-45 report indicated that, of 270,000 ac. which would ultimately be included in the Murray Valley Irrigation district, constituted in 1939, an area of 103,238 ac. had been reticulated for the 1944-45 season, and water rights totalling 22,291 ac.ft. had been apportioned to these lands.

In all of the Australian irrigation systems, the commission reported the irrigation of 665,200 ac. during the year 1945-46.

New Zealand.-Because of a generally abundant rainfall elsewhere in New Zealand, the practice of irrigation was confined to two distinct localities in the South Island, where as a result of the location of a lofty mountain range across the usual path of moisture-bearing winds, portions of the country lying on the lee side were poorly served by rainfall. As in many countries, the practice of irrigation followed the use of water for alluvial mining. The mining term "race" in lieu of canal endured and became used throughout the country, even for modern irrigation works. Many of the old mining races were converted to the use of private irrigators, but there was no widespread tendency for private interests to develop irrigation on a large scale. Realizing the possibilities from a production point of view, the government in 1941 embarked upon a policy of state development. Although this district has a low rainfall, it is plentifully supplied with streams, most of which are snow fed. The main streams lie deep in the valleys and, by 1946, had not been utilized for water supply, the smaller streams providing better diversion facilities and reasonably cheap storage. The irrigated acreage in this region increased from 3,200 ac. to 53,000 to the close of 1945.

In 1932, an intensive research had been conducted to determine whether irrigation would prove feasible for the Canterbury plains, and it was decided to proceed with the development of irrigation to encourage closer settlement and increase production. From 1934 to 1946 a comprehensive construction program was undertaken with the result that by the latter year, water was available for 51,000 ac. and irrigation works covering a further 44,000 ac. were at hand. On some projects water would be made available to only a portion of the total irrigable area, but never less than 50%. Approximately 1,000,000 ac. of the Canter-

bury plains were suitable for irrigation and would benefit from it. As for water storage, in the summertime the same weather conditions that cause the hot dry winds in the plains area also provide a heavy rainfall in the catchment of the rivers which traverse the plains, with the result that the maximum discharge of the rivers occurs during the irrigation season. The streams carry a great deal more water than is required for irrigation, consequently storage dams are not necessary and adequate supplies are available by direct diversion. In 1937, the Red Cliff project on the Waitaki river was completed to irrigate 4,600 ac. In 1938 the Levels plain project on the Opiki river was completed to irrigate 12,800 ac., and in 1946 the Ashburton-Lyndhurst project on the Rangitata river was completed; water was supplied for 34,000 ac. with an irrigable acreage of 64,000. The Mayfield-Hinds project on the Rangitata river was also in process of expansion; water was to be supplied for 44,000 ac. with an irrigable acreage of 87,000 ac. Two more projects on the Rangitata river with an irrigable area of 115,000 ac. and one of the Rakaia river with an irrigable area of 145,000 ac. were planned.

Iran.-Iran is probably the oldest irrigated country in the world. So far as reliable scientists could determine, the largest irrigation canal system ever built anywhere in the world was put into operation in southwestern Iran, probably before 1,000 B.C. The entire Karun river, largest in Iran, was probably diverted at a point near the modern city of Ahwaz, where canals were excavated on either side of the river. The canal on the east side was more than 63 mi. long and approximately 721 ft. wide at a point about 3 mi. below the intake. The canal on the west side had similar dimensions and covered a vast area of silt lands extending all the way down to the vicinity of the confluence of the Tigris and Euphrates rivers. These canal systems remained in complete ruin for more than 1,000 years, and there was no sign of use in 1946. In the meantime, the country survived by virtue of the development of small irrigation projects scattered throughout the country. Most of the development was made independently by individual owners, who in the majority of cases developed their water supply from underground by digging underground channels known as kanats (wells).

Surface streams in the interior of Iran are very limited in capacity and most of them are intermittent, flowing for only a short time in early spring during the period of most heavy precipitation and during the time of snow melt in the mountains.

In 1939-40, two projects were constructed or were under construction in the vicinity of Kermanshah, on the headwaters of the Karkheh river. At Shabankareh in southern Iran, about 90 mi. north of the ancient port of Bushire, a diversion dam was built in 1942, but the canal system was not completed until 1943-44. This project comprised approximately 49,000 ac. It included 22-odd villages that had formerly subsisted largely on dates produced along the fringe of the area where a limited water supply was available by various means of development. The new project provided possibilities for expansion. It also provided possibilities of ultimate ownership of lands by the peasant farmers. The climate of this project is tropical, and the crops cover a wide variety of products-with wheat as the principal crop and cotton as a secondary crop. During 1944-45, surveys were made for developing a very large project in the vicinity of Tehran. It was proposed to build a dam approximately 400 ft. high for storing water on the Lahr river at the base of Mount Demayend.

Normally the Lahr river discharges into the Caspian sea, but it was proposed to drive a tunnel some 3.1 mi. long through the mountain range to deliver the water of the reservoir to lands south and east of Tehran. The water supply would be sufficient for development of about 247,000 ac. of land. This would also supplement existing developments on the Varamine plain, sparsely irrigated by flood waters of Djarje Rud.

The project would also provide hydroelectric power for all of northern Iran, since the water supply would fall through an elevation of more than 2,000 ft. before being used for irrigation.

During the 1944-45 period, plans were also made for development of Zaindeh Rud, which supplied water for the lands above and below Isfahan, the ancient capital of Iran. This valley is about 155 mi. long. Plans were made for developing a series of storage dams along the river and a tunnel through the high mountain range to carry waters from the Kurang river, a tributary of the Karun. One of the most important advantages of this project was the control and distribution of the waters of Zaindeh Rud by providing impartial distribution. It was possible to mature crops throughout the entire length of the valley and to prevent famine during dry years when the water would have been consumed by the upper water users leaving the lower half of the valley dry during summer months.

India.—During the irrigation season 1937–38, the total area irrigated in all of the provinces of India under state projects amounted to 32,433,000 ac. as compared with an average of 28,968,500 ac. irrigated for the triennium 1934–37. Of this total, Punjab was first with 12,291,800 ac. irrigated, Madras next with 7,565,100 ac. and United provinces third with 5,163,800 ac. Sind was fourth with 4,849,300 ac.

In 1939, the total acreages irrigated in these same provinces amounted to 33,433,000 ac., with the Punjab, Madras, United provinces and Sind remaining in the same order as in the 1937-38 season. The principal construction projects completed in the year were the Kistna East Bank canal in the province of Madras and the Nira Right Bank canal in Bombay. In 1940, work was started on Thal project as the Haveli project was opened. Because of the great quantities of silt carried in the canals of this area, particular attention was given to desilting works to be included in the plans of conveying channels. Construction of irrigation works began to slow down by 1941, so that the Central Board of Irrigation of India emphasized research and the production of crops over the construction of works during this and the next several years. They did, however, continue work on projects already started-particularly the India-Sarda canal extension, involving more than 350 mi. of new canals. From 1941 to 1946, only those works necessary to produce better and larger crops were kept under construction. By 1946, of the total of about 70,000,000 ac. of land irrigated annually in India, 65% or about 45,000,000 ac. were managed by the government. (See also Dams.)

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Isaacs, George Alfred

Isaacs (1883-), British labour leader and politician, was born May 28, 1889, in London, the son of a newspaper printer. At the age of 12, he got a job as office assistant in a newspaper plant. Later he became a printer's assistant and became prominent in trade union activities. In 1922, he was elected to parliament on the Labourite ticket, serving through 1923 and 1924. In 1929, he was again elected to parliament, but lost his seat in the general elections of 1931, and was not returned to Commons until 1939. During World War II, Isaacs became parliamentary secretary to A. V. Alexander, then first lord of the admiralty, in 1942. In 1944, he was appointed chairman of British Trades Union congress and in July 1945, Prime Minister Clement Attlee selected Isaacs as minister of labour and national service. Isaacs, who was in charge of demobilization, announced in Oct. 1945, his military discharge plan which called for release of 1,500,000 personnel in the armed forces by the end of 1945 and another 1,500,000 by June 1946. He subsequently told Commons May 30, 1946, that the wartime draft would be continued through 1946 but stated that only 18-year-olds would be conscripted in 1947.

Islam

Beginning in the early 19th century, the intellectual and social development of the Islamic peoples was marked, in all except the most backward countries, by a growing indifference to religion among the educated classes brought up in lay and Christian missionary schools. This was accompanied by the growth of lay nationalism, of socialism and of other doctrines attempting to place social and political organizations upon a nonreligious basis, thus coming explicitly or implicitly into conflict with the claims of Moslem law. Either complete agnosticism and even "anticlericalism" resulted, or else an attempt to free Islam of its "trapping" and "outmoded doctrines," and to develop a liberal modernist Islam. At the same time there was a tendency to cast aside traditional ideas and practices in such matters as the seclusion of women, and in certain of the non-Arab Moslem countries, such as Turkey and Iran, an attempt to abandon Arabic words and idioms and other signs of Moslem and Arab influence. It was true that orthodox Moslem teaching continued, that the influence of Moslem ulema in politics and society was still strong, and that popular religious enthusiasm still persisted, but it was generally assumed that religious fanaticism would decline with the spread of enlighten-

The years 1937-46 saw a continuation of these tendencies. In Turkey the official basis of the state was still nonreligious. In Palestine, Syria and certain of the other Arab countries where there were important non-Moslem minorities, the main body of the nationalist movement continued to profess belief in lay nationalism and emphasized the importance of national unity transcending differences of Moslem and non-Moslem, both in order to forestall foreign claims to "protect" minorities and to secure the active support of the non-Moslems. This lay tendency found expression in the establishment of the league of Arab states in 1944-45. The league was deliberately given a national and not a religious basis, and in the protocol of Alexandria, which first set forth the plan of the league, a special clause was inserted guaranteeing the position of Lebanon, in order to allay the fears of the Lebanese Christians (who numbered about one-half of the population) that the Arab league was only a disguised Moslem league. (See ARAB LEAGUE.) Similarly, in India, a number of Moslems supported the Congress party, which insisted that it was in the fullest sense a nationalist party and not the organ of the Hindu majority.

In social matters, too, the tendency to reject the claims of Islamic law to regulate the whole of social life continued. The movement for the emancipation of women had grown in strength in almost all the Moslem countries. In India, Moslem women were taking a prominent part in public life, in education and social activities. In Turkey, the younger women in the towns had practically achieved equality of status with men. In Egypt, the Red Crescent and other women's organizations were playing a prominent part in awakening the social consciousness. A number of Arab women's conferences were held, notably in Cairo in 1938 and 1944.

On the whole, the majority of the educated classes were becoming increasingly indifferent to the claims of religion and lax in their personal devotions, but in countries like Arabia, which had scarcely been touched by western education, and among the uneducated classes of all countries, religious fervour was still an important factor. Thus while Wahhabism had been shorn of some of its violence and crudity, it still had the allegiance of the greater part of the population of Nejd. The movement initiated by the Mahdi in the Sudan was by no means dead, although it had been dormant since the British occupation. Senussism in North Africa had been stimulated by the promises given to the Senussi by the British government and the freeing of Libya from Italian rule.

The orthodox schools and colleges still continued. The greatest of them, the Azhar university in Cairo, drew students from North Africa and central Africa, from India, the East Indies and China. The pilgrimage to Mecca, though unavoidably restricted during World War II, provided another bond between the Islamic peoples.

Besides these tendencies of long standing, however, it was possible to perceive others of later origin. There was much more doubt in 1946 than there had been even ten years previously of the value of westernization. There was, too, a growing sense of Islamic solidarity, that the Islamic nations should act together both in order to protect themselves from western political and economic aggression and to preserve what was still living and valuable in their own tradition. In certain countries, the movement of secularization and westernization had perhaps passed its peak." After the deposition of Riza Shah in Iran there was a noticeable slackening in the process and even a certain return to the social forms and customs of the past. Even in Turkey, which was always taken as the model of a westernized Moslem state, there were signs that the attitude of the government towards religion had been modified since the death of Kemal Atatürk. Similarly, the movement to free the Persian and Turkish languages of their Arabic words failed.

Among a section of the intelligentsia there was appearing a new intellectual interest in the doctrines and history of Islam. Writers who 20 or 30 years previously ignored Islam were turning back to it. In Egypt, the intellectual centre of Islamic culture, there had been a spate of books by well-known authors about the prophet Mohammed and his religion. The revival of intellectual interests was reflected in the growth of a number of politico-religious movements which were challenging the lay nationalist movements. Thus the Moslem league in India challenged the conception of an Indian nation and sought to replace

it by that of a Moslem nation with a right to independence in those regions of India in which it was predominant. In Egypt, the 1940s saw the rise of the *Ikhwan al-Muslimin*, a popular movement which was strong among the town workers and the younger intellectuals and which sought to rebuild the social and political life of Egypt on the basis of the principles and jurisprudence of Islam.

The soviet government began to show an increasing interest in its millions of Moslem peoples; soviet Moslems made the pilgrimage to Mecca, and diplomatic appointments in the middle east were given to soviet Moslems.

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Isle of Man

A British possession in the Irish sea, the Isle of Man has an area of 220.7 sq.mi. Pop. (est. 1939) 50,829. Chief towns: Douglas (20,014), Ramsey (4,240), Peel (2,523), Castletown (1,742). Lieut. governors of the Isle of Man during the decade 1937–46 were as follows: Sir Montagu Butler (Nov. 9, 1933–Sept. 30, 1937); Vice-Admiral W. S. Leveson Gower (Oct. 1, 1937–Sept. 6, 1945); Air Vice-Marshal Sir Geoffrey Bromet (after Sept. 7, 1945).

During the years 1940-45 the annual influx of some 600,000 summer visitors to the island ceased, but the all-the-year-round population was largely increased by the presence of internees, prisoners of war and personnel of the fighting services. In addition to army training units, the island became the wartime home of an important naval radar school, H.M.S. "Valkyrie"; a boys' training establishment, H.M.S. "St. George"; and the royal naval school of music. There were also two R.A.F. airfields, one at Jurby and the other at Andreas, and a number of wireless telegraphy and radar stations in various parts of the island.

During World War II the island contributed more than 6,000 men and women to the fighting services and the merchant navy, and considerable numbers to munition factories. Financially, the Isle of Man government gave to the imperial government £1,250,000 and lent £1,000,000 free of interest. National savings represented about £7,000,000 or £140 per head of the population. Nine thousand additional ac. of agricultural land were under the plow, 5,000 being under wheat which was milled at Laxey in the island. On July 5, 1945, the king and queen presided over the time-honoured Tynwald at St. Jöhn's.

(G. R. B.)

Isotope

See Atomic Bomb; Biochemistry; Chemistry; Physics; Physiology.

Istria

See TRIESTE; YUGOSLAVIA.

Italian Colonial Empire

Until 1941 the Italian colonial empire consisted of Italian East Africa, Libya and the Dodecanese islands. Italian East Africa (Africa Orientale Italiana) was created on June 1, 1936, after the annexation of Ethiopia and the union of this state in one compact territory with the old colonies of Eritrea and Italian Somaliland. In 1941, the whole of Italian East Africa was conquered by the British who, in May 1941, reinstated Emperor Haile Selassie on the throne of Ethiopia. The rest of the Italian colonial



"Darkest Africa" was not enthusiastic about European culture in 1940, according to Messner of the Rochester Times-Union

empire was at the end of 1946 still under British military administration. The Dodecanese, by agreement of the Big Three foreign ministers, were awarded to Greece.

Libya.—Area: 679,183 sq.mi.; pop. (census June 1, 1940): 910,669 of whom 123,898 were Italians, 6,233 foreigners and assimilated, 31,072 Jews and 749,466 Moslems (mainly Arabs and Berber Arabs but also 31,221 Negroes). Languages: Italian and Arabic. Chief towns: Tripoli (cap., 1940 census 116,387), Bengasi (1939 est. 66,009); Misurata (1939 est. 46,221); Homs (1938 est. 34,940). Governors General: Marshal Italo Balbo (Jan. 1, 1934–June 28, 1940) (killed in an air crash); Marshal Rodolfo Graziani (June 30, 1940–March 24, 1941); General Italo Gariboldi (March 25, 1941–July 19, 1941); General Ettore Bastico (July 20, 1941–Jan. 23, 1943); British administrator, Brigadier M. S. Lush (after Jan. 26, 1943).

Entrea.—Area (1935): 45,754 sq.mi.; pop. (est. Jan. 1, 1940): 688,434 of whom 73,192 were Italians, 242 foreigners and assimilated and 615,000 natives. Among the natives there were 289,358 Christians (Coptic rite), 321,891 Moslems and 3,751 belonging to other religions. Languages: Italian, Amharic, Tigré and Arabic (in the low-lands and ports). Chief towns: Asmara (cap., pop. 1940 est. 91,431); Massawa (1939 est. 17,169). Governors: General Emilio de Bono (Jan. 17, 1935—Oct. 1936); General E. Guzzoni (1936–March 1937); Admiral C. M. de Feo (March 17, 1937—Dec. 1937); Dr. Giuseppe Daodiace (Dec. 15, 1937–April 1, 1941).

Italian Somaliland.—Area (1935): c. 194,000 sq.mi.; pop. (est. Jan. 1, 1940): 1,078,766, of whom 19,068 were Italians, 2,963 foreigners and assimilated and 1,056,735 natives. The natives were classified as follows: Hawiyya 373,344; Darod 241,675; Rahanwen 263,232; others 178,484. Chief town: Mogadiscio (cap., 1940 est. 9,362). Governors: General Rodolfo Graziani (March 6, 1935–1937); Dr. Francesco

The Dodecanese (Aegean Islands).—Total area of some 50 islands and islets: c. 1,035 sq.mi. (of which Rhodes 542 sq.mi.); pop. (est. Dec. 1939): 122,000 of whom 85% were natives (mainly Greeks), 12% Italians and 3% foreigners. Chief towns: Rhodes (cap., 1936 census 27,466); Kalymnos (15,247). Governors: Cesare Maria de Vecchi Conte de Val Cismon (1935–1940); General Ettore Bastico (Dec. 7, 1940–1941); Admiral B. Campione (1941–1943; shot by the fascists).

Stormy Ethiopia.—The annexation of Ethiopia (q.v.) by Italy, as proclaimed by an act of May 9, 1936, continued to have important consequences for Italian foreign policy in the following years. When in July 1936 the League of Nations decided to remove the sanctions, the question of recognition of the annexation arose. After a declaration made by Lord Halifax, a meeting of the council of the League held at Geneva in May 1938 left each government a free hand. This led to two forms of recognition by the several governments: direct recognition by a special act accepting Italian sovereignty in Ethiopia, or indirect recognition given by addressing the credentials of the new ambassadors or ministers in Rome to the Italian sovereign by his new title of emperor of Ethiopia. France recognized Italian sovereignty over Ethiopia by an act of Nov. 13, 1938, and Great Britain on Dec. 16, 1938.

After the Italian occupation of Addis Ababa and the departure of Emperor Haile Selassie, a local government was set up at Gore, in the western part of Ethiopia, which claimed to exercise its authority in the name of the negus. At the same time the remnants of the Ethiopian army of the south, under the command of the son-in-law of the emperor, Ras Dasta Damtou, prolonged the resistance at the entrance to the valley of the Great Lakes. Marshal Rodolfo Graziani, who in Dec. 1986 had succeeded Marshal Pietro Badoglio in the office of viceroy of Ethiopia, carried out against these two main groups of Ethiopian forces some military operations which led to the defeat of Ras Dasta Damtou, who was captured in battle and shot. The operations also brought about the surrender, in March 1937, of the forces of Ras Imru, who had become the head of the government of Gore. He was sent as a prisoner to the island of Ponza in Italy. On Feb. 19, 1937, an attempt was made on the life of Marshal Graziani while he was attending a ceremony. Eight hand grenades were thrown at him and his suite by unknown assailants. Marshal Graziani, who was severely wounded, ordered harsh measures of repression, the practical result of which was to give rise to anti-Italian attempts at rebellion, one in the northern Shoa, headed by Ras Abbeba Aragaui, and the other in the Gojam, with Dejaz Mangasha at its head. These circumstances made it necessary to carry out various military operations in the Shoa and the Gojam, and on Nov. 20, 1937, Marshal Graziani was replaced as viceroy by Prince Amedeo of Savoia, duke of Aosta, nephew of King Victor Emanuel III.

The duke of Aosta introduced a policy of collaboration with the Ethiopian chiefs, calling on them to co-operate in the organization and development of the country, both at the centre and in the outlying districts, and trying to carry out a plan of government inspired by friendly feelings toward the native population, both Christian and Moslem. The Ethiopian church, which had at its head a metropolitan appointed by the Coptic patriarch of Alexandria, had already been proclaimed autocephalic in Nov. 1937, and the Egyptian Metropolitan Cyril had been replaced by an Ethiopian, Abraham, elected by the Ethiopian clergy. Later, when the Metropolitan Abraham died in 1939, and

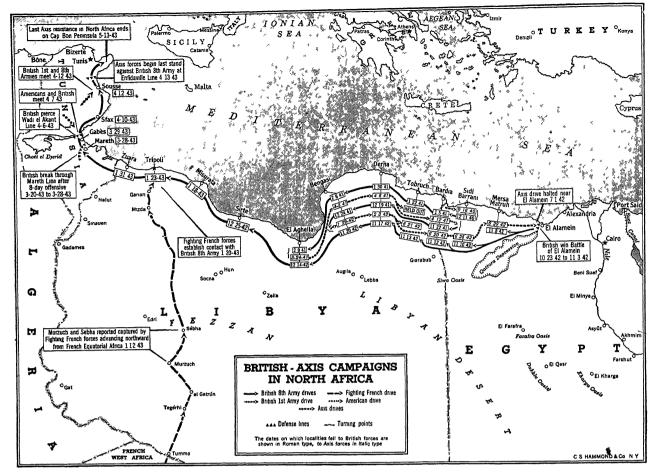
the Metropolitan Johannes was elected in his place, an assembly of the Ethiopian church was held including ecclesiastics and laymen, on the pattern of the majlis milli of the Copts, and a new constitution was adopted for the Ethiopian church. All this was interrupted by the outbreak of World War II, which again brought the problem of Ethiopia into the international field.

The annexation of Ethiopia made it necessary for the Italian government to carry out a plan of public works to confer on that country a modern equipment. The first matter to be dealt with was the problem of communications. For this purpose a road system was studied and completed in the years 1937-1939, designed on lines which overcame the difficulties peculiar to a country crossed by high mountains. In 1936 Ethiopia was connected with the bordering countries only by the French railway from Jibuti to Addis Ababa (486 mi.). Later the Italians built roads which connected it with: (1) Eritrea, crossing the whole of the central and southern plateau of Ethiopia (Assab-Dessye, 298 mi., all tarred; Massawa-Dessye-Addis Ababa, 729 mi., of which 571 mi. were tarred); (2) French Somaliland, a motor road running parallel to the railway line (Addis Ababa-Dawanle, on the French frontier, 420 mi., of which 67 were tarred and 287 on a made bed); (3) British Somaliland, from Harar via Jijiga to Berbera, under the Italo-British agreement of Jan. 1937. Another road connected Addis Ababa with Lekemti in western Ethiopia (201 mi. of which 118 were tarred), while Gondar and the region of Lake Tana were connected with Asmara by a road 213 mi. in length, of which 209 mi. were tarred. To carry out all these works large bodies of Italian workers, both skilled and unskilled, emigrated to Ethiopia, thus permitting an experiment to be made in the employment of European labour in Africa which was not without value.

Development of Libya.-In Libya, the Italian administration pursued steadily the policies which had been started under the arrangements made in Dec. 1934. On Jan. 9, 1939, a royal decree provided that the four provincial commissariats of Libya (Tripoli, Misurata, Bengasi and Derna) should be transformed into provinces which became an integral part of the kingdom of Italy, thus ceasing to be considered a colony. A special form of Italian citizenship was conferred on the natives of Libya, under which they continued to be subject to the Moslem civil law, instead of the Italian civil code. This law came into force in April 1939 and its application was interrupted by the war. In the field of public works the activity of the Libyan government was devoted at this time above all to building along the sea coast the road which joined Tripoli to Bengasi and Tobruk. This road, running for a length of 1,111 mi. and 7.63 yd. wide, was finished in Feb. 1937 and became the main artery of Libya.

The need of agricultural development induced the Italian government to make, in the years 1938 and 1939, two important experiments in population settlement, sending to Libya first 20,000 and then 11,000 agricultural workers. In this way the Italian government intended to settle, if only partially, the problem of over-population in Italy. In the two years mentioned, 3,550 rural families emigrated to Libya, and were settled on an area of 280,987 ac., divided up into holdings, and forming 24 districts. During this same period, and in conformity with a vast plan prepared by the government, the first agricultural settlements assigned to native Libyans were provided. In 1939, 262 farmhouses for natives were built as against 32 in 1938.

The development of the agricultural resources of Libya



was encouraged in the years 1934-39 by the sinking of a series of artesian wells which provided water to irrigate the fields, by rewooding the cliffs, so as to check the advance of the sands toward the cultivated areas, and by introducing modern systems of cultivation. The areas for which grants were made rose in Libya from a total of 463,738 ac. in 1937 to 925,435 in 1940, and those under cultivation from 276,766 ac. to 563,103. In 1940, 201,359 ac. were reserved for olive-groves in which were 2,423,313 olive trees, as compared with 152,868 ac. and a total of 1,806,638 trees in 1937. In the same way the area under vineyards rose from 32,807 ac. with 31,826,825 vines in 1937 to 42,934 ac. with 40,106,500 vines in 1940. Remarkable results were secured in the Jebel of Cyrenaica, where the area under cultivation passed from 14,721 ac. in 1936 to 27,541 in 1938, while the cereal crop rose from 4,843 short tons in 1935-36 to 10,561 in 1937-38.

Eritrea and Somaliland.—In Eritrea, commercial and industrial activities from 1936 to 1940 marked a rapid growth as a result of the greatly increased volume of trade with Ethiopia. Important works were carried out for enlarging the ports of Massawa and Assab, and new roads were built connecting the coast with the interior. Mention should be made in connection with the industrial development of agriculture of the land-reclamation works carried out in the plain of Tessinei by regulating the waters of the river Gash, under an Italo-British agreement signed in 1927. In 1940, a new canal was being built which would enlarge the surface which could be flooded to reach a total of some 17,290 ac. In 1939, 1,100 short tons of dura wheat and 660 short tons of cotton were obtained from the Tessinei plain alone.

In Somaliland, the efforts of the government from 1936 to 1940 were directed to improving the means of communication, the harbour facilities and above all to developing the agricultural possibilities of the country. In 1930, the total length of the roads open to traffic was 8,151 mi.; in 1940 the total stood at 9,032 mi. Great harbour works were carried out at Mogadiscio; in 1939, a breakwater 13 yd. wide had been completed, stretching for more than 0.61 mi. along the sea-shore. The ports had been improved at Merca, which had acquired considerable importance as a result of the growing export of bananas coming from the neighbouring area of Genale, and at Brava. Developments in the field of agriculture had been chiefly those achieved in the cultivation of the banana, in the cotton plantations, in the sugar-cane plantations, and in increasing crops of maize, ground-nuts, and castor-oil plants.

In 1940, there were 179 agricultural undertakings owned by Italians in Somaliland, covering a total area of 160,394 ac., of which 83,004 had already been reclaimed and 45,618 were under cultivation. Important works were carried out along the rivers Juba and Shebeli, where embankments were built, pumping plants set up for raising the water, and irrigation ditches dug for irrigating the land so as to secure higher returns from the native *sciambè* (cultivated fields).

Lost Empire.—At the outbreak of World War II, Italy was actively engaged in the economic development of its colonies. Its entry into the war in June 1940 came just at a time when it was most in need of a long period of peace, and led to the suspension of the work which was already beginning to yield its first important results in the African colonies. The East Africa territories, which were com-

pletely cut off from Italy, held out until Nov. 1941. At first the Italian forces took the offensive in limited areas in the Gallabat and Kassala zones (Sudan) (July 1940) and in the region of Moyale in Kenya (Sept. 1940), mainly for the purpose of gaining time. The operations which led to the occupation of British Somaliland (Aug. 1940) were on a somewhat larger scale.

The British offensive, under General Sir Alan G. Cunningham, announced toward the end of 1940, started almost simultaneously in several directions. The Italian forces, after a long struggle near Keren (Eritrea, March 1940), were soon isolated in the three areas of Amba Alaji (Tigrai), Gimma (western Ethiopia) and Gondar. They capitulated with the honour of arms on May 17, July 8, and Nov. 27, 1941, respectively. In May of that same year the British authorities reinstated the Negus Haile Selassie on the throne of Ethiopia. The viceroy of Ethiopia, the duke of Aosta, was taken prisoner at Amba Alaji in May 1941, and died in captivity on March 3 of the following year, in Nairobi.

In Libya the war was longer and caused heavier losses (see World War II). The final victory of El Alamein (Oct. 23, 1942) led to the occupation of the whole of Libya by the British 8th army under Field Marshal Lord (then Sir Bernard) Montgomery. Tripoli was occupied on Jan. 23, 1943.

Dispositions.—The future of the Italian colonies in Africa was examined at the first meeting of the ministers of foreign affairs in London (Sept. 1945); particular attention was given to a U.S. suggestion to place those territories under the trusteeship of the United Nations. The second

Italian Colonial Empire: Statistical Data, 1938

•	Value	Amount or		
ltem	(000's omitted)	Number		
Exchange rate United States		1 Lira = 5.26 cents 92.7 to 94.8 Lire = 2		
LIBYA Finance		72.7 10 74.8 LIFE = 2		
Government revenues (estimate) . Government expenditures (estimate)	\$22,459* (£4,594) \$22,459* (£4,594)			
Transportation Railroads		0.40		
Highways		242 mi. 2,162 mi.		
Communication		•		
Telephones		3,260		
Radio sets		1,712 mi. 6,500		
Minerals		•		
Salt		40,680 tons		
Olives		4,409 "		
Olive oil		1,102 "		
Livestock Sheep				
Goats		890,323 726,006		
Sea products		7 20,000		
Tuna		1,022 tons		
Sponges	\$5,732 (£1,172)	107 tons		
Animals, food, tobacco	\$1,274 (£261)	•••		
Textile and textile manufactures .	\$398 (£81)	• • •		
Imports—total	\$46,401 (£9,491) \$15,732 (£3,218)	•••		
Animals, food, tobacco	\$10,101 (£2,066)	•••		
ITALIAN EAST AFRICA		•••		
Transportation Eritrea highways		00/0		
Italian Somaliland highways		2,263 mi. 9,032 mi.		
Minerals		7,002 1111.		
Eritrea				
Gold		1,764 oz.		
Tin		45 tonst		
Crops ®				
Eritrea Barley		20,944 " ‡		
Wheat		20,944 " ‡ 4,189 " ‡		
Italian Somaliland				
Bananas		84,161 " ± 68,741 " ±		
Exports§—total	\$10,094 (£2,065)	00,741		
Animals, food, tobacco	\$3,255 (£666)	• • •		
Minerals and mineral products	\$2,602 (£532) 5130,306 (£26,653)	• • •		
Imports§—total	\$40,225 (£8,228)	• • •		
Minerals and manufactures	\$26,225 (£5,364)	•••		
*In 1940: revenues (estimate): \$30,250 (£7,898), expenditures (estimate): \$30,250 (£7,898).				
†1939. ‡1937. §Including Ethi	opia.			

meeting of the "Big Four" in Paris (May 1946), after a French proposal to give to Italy the "single trusteeship" of her colonies under the control of the U.N., decided that the whole problem should be adjourned for one year, Italy renouncing her actual rights, and the administration of those territories to be held during that period by the British military authorities. The conference of the 21 powers in Paris (July-Sept. 1946) approved that decision.

(E. C1.)

As to the Dodecanese, Alcide de Gasperi, then Italian foreign minister, stated in a note sent on Aug. 22, 1945, to the U.S. secretary of state that Italy raised no objections to the passing of these islands to Greece. Turkey expressed the same opinion. The council of foreign ministers of Great Britain, the United States and the U.S.S.R. (London, Sept. 1945) decided that the Dodecanese would pass to Greece At the end of 1946 the islands were under a mixed British-Greek administration.

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Italian Literature

During the second half of the 1930s Mussolini reached the apex of his power. He ruled supreme in Italy, after having conquered Ethiopia, founded an empire, undermined the League of Nations, helped establish fascism in Spain and occupied Albania. His prestige in and outside Italy was enormous. Heads of foreign governments, diplomats, bankers, educators, writers and journalists flocked to Rome, the new Mecca, to see him, talk to him and write about the miracles wrought by fascism in the physical and moral life of Italy. In this world-wide chorus of praise, one voice was silent-the voice of Italy's intellectuals. So loud was the chorus, however, that few noticed its absence. In point of fact a survey of the decade 1937-46 in Italian literary life, a decade including the peak years of the fascist era, leads to the astonishing discovery that fascism and its triumphs did not inspire a single work or writer of stature.

Blank Slate.—It is true that fascism was in favour of culture, but it had to be fascist culture. Writers had to show that their works were inspired by the regime and had to exalt its leaders, its achievements, its ideology, the thrill of living dangerously, the joys of large families and the new Italian ever ready to lay down his life for the duce. Historians were expected to demonstrate that Italy had been, under the liberal governments, the Cinderella of the world whereas she was now admired, respected and feared, or, in order to implement Mussolini's fluctuating foreign policy, they were expected to prove that this or that nation was Italy's eternal enemy.

Academic honours and literary prizes were instituted to make the acceptance of this program palatable. But the majority of the Italian intellectuals, spurning both, remained faithful to the republic of letters. Forced to ignore the present, they withdrew into a kind of ivory tower and, like the scholars of the middle ages, dedicated themselves

to learning and to the study of the past. But even the past sometimes proved a mine field. No dangerous parallels could be made with the present. Caesar had to be presented as the hero, Brutus as the villain. Dante's greyhound could be interpreted only as the duce. A sentence such as "England has a great colonial experience" had to be changed into a negative. The dangers multiplied as one approached modern times. The art historian, A. M. Brizio, was turned out of her position because of her favourable treatment of French impressionism; F. Flora, author of a fine history of Italian literature, had to ask someone else to write the last volume dealing with the 20th century; B. Croce's History of Italy symptomatically ended with the year 1915.

Notwithstanding the limitations imposed upon men of letters, the ten years did see the publication of excellent scholarly histories of literature (Flora, P. Pancrazi, G. Prampolini), art (Ed. Unione Tipografico-Editrice Torinese), philosophy (Ed. Fratelli Bocca, G. de Ruggero), music (Andrea Della Corte and Guido Pannain, F. Abbati), the drama (S. d'Amico, M. Apollonio).

Painstaking research on the origins of the Italian theatre brought forth some outstanding works: M. Bonfantini's Sacre rappresentazioni italiane and V. de Bartholomaeis' three-volume Laude drammatiche e rappresentazioni sacre. New studies in universal, European and Italian history were conducted by C. Barbagallo, Croce, Luigi Salvatorelli and Adolfo Omodeo. A thorough re-evaluation of classic and modern authors by such literary critics as Croce, A. Momigliano, Vittorio Cian, Giuseppe Toffanin, Michele Barbi, Luigi Russo, Bruno Nardi, Alfredo Gargiulo and Gaetano Gasperoni brought the past into clearer perspective. There appeared a number of emasculated encyclopaedias in the various fields of knowledge. The publication of the last volume (1937) of the Enciclopedia Italiana was hailed as the last stone completing a monument to fascist culture. However, it was generally recognized that the Enciclopedia, except for the entries dealing with fascism and religion which had either been written or expurgated by the fascist and ecclesiastical authorities, was representative of nothing but the high level reached by Italian culture when fascism came to power.

Especially difficult was the lot of the novelist, who was expected by the regime and his readers, for diametrically opposite reasons, to deal with the contemporary scene. Subjects recognized by all as being taboo included the ugly side of life, poverty, malaise, suicide, as well as complacent or peace-loving characters. Docile or discreet though he might be, no writer could ever gauge with certainty what character, situation, description or line of his novel might arouse the suspicions of the omnipotent and often ignorant censors, who were, as a rule, retired army colonels or former members of the diplomatic service.

Given these circumstances, novelists also sought refuge in the past. They found it in their own adolescence or in the delineation of city and provincial life of the Ottocento (A. Palazzeschi, Riccardo Bacchelli, O. Vergani, Bino Samminiatelli, Bonaventura Tecchi, Giovanni Titta Rosa, Alba de Cèspedes, Vito Mosca, Vasco Pratolini, etc.). Some successfully shifted their early experiences against fantastic and mythical backgrounds (C. Alvaro, B. Cicognani). Others poured out their stories in diary form without revealing anything worth while. In a deliberate effort to elude censorship, Alberto Moravia and Alvaro transferred the action of their novels (La Mascherata and L'Uomo è forte) to an imaginary police-state. Although the subter-

fuge worked in Alvaro's case, Moravia's work was banned shortly after publication.

Other manifestations of escapism were "la bella pagina," brief essays or bravura descriptions couched in a hybrid form between prose and poetry, but excelling in lyrical quality and elegance of style.

The two most significant novels produced after fascism's advent to power were by two young writers who were approximately 14 years of age at the time of the march on Rome: Gli indifferenti (1929) by Alberto Moravia and Conversazione in Sicilia by Elio Vittorini. The first, which escaped the censor's eye by a mere fluke, dealt with the complete amorality and utter degeneration of the Italian bourgeoisie; the second, published in a magazine a few months after the proclamation of the empire and soon suppressed when it appeared in book form, described the disillusionment and revulsion of the people for the life they were compelled to lead, their hatred of the things they were forced to do, their compassion for the "suffering world," and their yearning for "new duties" in a new humanity.

Moravia's "indifferentismo" and Vittorini's activism were clearly manifestations of the spiritual evolution of the young generation and its gradual but definite detachment from the fascist ideology.

The theatre was the literary field most completely devastated by the dictatorship. It was said that Mussolini had set up a special censorship bureau for the theatre under his personal supervision, in the conviction that an actor could, by the modulation of his voice and the expression of face or hands, suddenly inject political significance into an otherwise innocuous line which, communicated to a crowd in the semi-obscurity of a hall, might readily provoke a political demonstration. Be this as it may, the fact remained that no play of real merit was produced in Italy during the reign of fascism.

The most discussed literary movement of the decade 1937-46 was "ermetismo" or "hermetic" poetry. Its roots could be found near and far. Its meaning was for the most part obscure: the poet limited himself to distilling from his soul the lyrical emotions registered by his mind during a particular event, a personal experience, a vision or a dream, about which the reader knows nothing, but which he is supposed to grasp through the suggestive impression arising out of the rarefied musical waves produced by the word. The poets more or less associated with "ermetismo"-G. Ungaretti, E. Montale, Salvatore Quasimodo, Alfonso Gatto, Mario Luzi, Piero Bigongiari and Alessandro Parronchi-reached the heights of their popularity during the last years of the dictatorship, following a bitter campaign on the part of the fascist press that recognized in their obscurity a hiding-place for their antagonism against the regime.

A panoramic view of Italian literature up to the fall of fascism thus reveals on the one hand a large output of printed matter by fascist scribes and party hacks without culture or following, and, on the other, quite a few imposing works in the field of historiography and literary criticism which kept alive the spirit of freedom and independence. There was in the creative field a tendency toward surrealism and fragmentarism, a distinct emphasis on plot, psychological analysis and the sensational rather than on the beautiful. There was general agreement that the two most conspicuous currents—"indifferentismo" and "ermetismo"—which proved to be the only shelter and salvation of many writers, were both symptoms of the profound moral, intellectual and political crisis which was being undergone at that time in Italy.

Risorgimento.-Freed from the shackles of fascism after a terrible war, Italy worked feverishly to rebuild not only her devastated cities and her ruined economy, but her culture. There was an unquenchable thirst to know what had been written and thought abroad during the 20-year blackout of fascism. Only in 1945 were Italians allowed to read Erich M. Remarque's All Quiet on the Western Front, and the works of Ignazio Silone, Emilio Lussu, Giuseppe Borgese, Gaetano Salvemini, Carlo Sforza, Don Luigi Sturzo and other Italian exiles. U.S., British and U.S.S.R. books were widely read and studied. Noteworthy in this connection were two histories of soviet literature, one by Ettore Lo Gatto and the other by R. Poggioli, Somma's history of U.S. literature, Maria Martone and Bizzarri's anthology of Anglo-U.S. writers, Vittorini's Americana and the yearly international Quaderni of Prosa edited by G. Manzini and Poesia by E. Falqui.

Regained freedom of thought and expression gave a tremendous impetus to artistic and literary life. The first tidal wave of publications could not but be largely autobiographical in nature. Many authors poured out everything they had thought, known and felt but could not express about fascism when it was in power (Flora, B. Allason, Palazzeschi, Barbagallo, F. Monicelli, L. Mondini, A. Favoino, V. Napolitano, etc.); some (G. Persico and the scientist M. Giua) told of their experiences as political prisoners; others (L. Bolis, Ascarelli, A. M. Santacroce) dealt with nazi-fascist atrocities; another group (S. Aleramo, Tecchi and A. Troisio) described civilian life during World War II. Partisan warfare and the resistance movement, in which such promising young intellectuals as E. Colorni, G. Pintor, Leone Ginzburg and the painter Agostoni Ciri lost their lives, provided a rich source of material (Pino Levi, Giorgis Bocca, R. Battaglia, G. Beltrami, A. Benedetti, J. Lussu, etc.), and inspired two special issues of the new monthly Mercurio. Statesmen, generals, diplomats and journalists (Benito Mussolini, Galeazzo Ciano, Pietro Badoglio, G. Carbone, M. Roatta, E. Grazzi, P. Monelli, etc.) published memoirs, reports and secret documents on the political and military events which preceded and followed the war and which, evaluated cum grano salis, would prove invaluable to the student of World War II.

In the field of fiction two names stood high: that of Vittorini for his powerful novel Uomini e No on the occupation and resistance movement in Milan in which the people fighting in the streets become the symbol of humanity fighting oppression; and that of C. Levi, a surgeon, painter and political prisoner who, in Cristo si è fermato a Eboli, gave a stirring picture of life among the hapless primitive peasants of Lucania.

To these names should be added those of Natalia Ginzburg, S. Micheli, A. Villa, C. Coccioli, B. Joppolo and Guido Piovene who, in their novels, cut deep into the problems of the times, revealing the anguish of man living in a world which might die, in the expectation of a world not yet born.

Philosophical studies after the fall of fascism showed three different trends: neo-hegelian idealism, Christian spiritualism and independent realism. Existentialism, although widely discussed, so far had no perceptible influence on literature. "Hermetic" poetry showed a marked tendency toward clarity of form and content. Writers, in their vast majority, emerged from their ivory towers to take active part in the life of the nation. Their evolution was evident not so much in books, which were slow as vehicles for the discussion of the pressing problems of the moment, but in the galaxy of lively new periodicals which served as easily accessible forums: Realtà politica (Actionist); Città Libera (Conservative); La Nuova Europa. (Ed., Salvatorelli); Belfagor (Ed., L. Russo); Rassegna italiana (Ed., F. Flora); Europa Socialista (Ed., Silone); Politecnico (Ed., E. Vittorini); Ponte (Ed., P. Calamandrei); Risorgimento (Marxist); Società (Marxist); Inventario (Ed., Berti and Poggioli); Mercurio (Ed., De Cespedes). The trend toward extremism so evident in 1944 had been replaced in 1946 by a growing consensus among writers that Italy's best chances lay in a socialist democracy with the artist participating fully in the solution of the country's social and political problems, history having amply proved that the loss of civil rights affects every citizen, the artist included.

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Italian Possessions in Africa

See Italian Colonial Empire.

760 . Italy

A republic in Europe, Italy had a pre-World War II area of 119,733 sq.mi.; pop. (census of 1936) 42,993,602 (est. July 1, 1943) 45,681,000. Chief cities (census of 1936): Rome (capital) 1,150,589; Milan 1,115,848; Naples 865,913; Genoa 634,646; Turin 629,115. Religion of the state, Roman Catholic. Victor Emmanuel III was king July 29, 1900, until his abdication May 9, 1946; Humbert II, king, May 9-June 2, 1946.

Forging the Axis.—At the beginning of 1937, although the first step toward an agreement with Germany had been completed by the visit of Count Galeazzo Ciano to Berchtesgaden in Oct. 1936, the political program of Benito Mussolini appeared uncertain and wavered between two

opposing tendencies.

The chief manifestation of a tendency toward conciliation, apparent but deceptive, was the "gentlemen's agreement" of Jan. 2, 1937, whereby Mussolini seemed to want to reassure England about his intentions in Africa and in the Mediterranean. So it seemed, and yet in the same month Hermann Goering was received in Rome and on that occasion it was publicly reiterated that the two nations had the same ideals and consequently the same adversaries.

Returning thereafter to a policy of reassurance, in keeping with the highly Mussolinian style of alternating threats of war with promises of peace, Italy concluded, in the following March, a pact of friendship with Yugoslavia, and the duce delivered a speech at Tripoli in which he declared that Italy intended to be left alone in its program for the development of East Africa, a task which would occupy it for many years. This was a confirmation of the "soothing" declarations made in 1936 to a correspondent of the Daily Telegraph immediately after the close of the Ethiopian campaign.

But whether Mussolini was temperamentally incapable of a foreign policy of prudence, or whether the developments of the Civil War in Spain convinced him that a serious attempt at conciliation was not necessary, the fact remained that in the course of 1937 the adherence of fascism to the policies of Germany took shape ever more clearly, and the foundations of all the future conflicts were laid.

The Italian people, wearied by the efforts they had put forth in Ethiopia and in Spain, did not fail to see the megalomania of these new schemes, and indubitable signs of discontent appeared in Italy. In order to counteract this reluctance to become involved in new adventures, and above all to become associated with the fate of Germany and of its leader, the dictator stressed the theme of living space which he had already invoked during the Abyssinian undertaking. This argument was indeed confirmed by the growing distress resulting from overpopulation (for which emigration no longer provided an outlet) and by a conspicuous decline in foreign trade and in the flow of tourists; and yet nothing could dispel the impression that even these phenomena were not merely the result of economic factors, inasmuch as the policies of the fascist regime, openly imperialistic and intransigent, were responsible for the diffidence and hostility of foreign countries.

Although it was easy to perceive this state of mind both within Italy and abroad, Mussolini decided to abandon all hesitation and speeded up the advance toward alliance with Adolf Hitler.

On Nov. 6, 1937, came the adherence to the anti-Comintern pact, on Dec. 10 the announcement of the with-

drawal of Italy from the League of Nations and finally on Dec. 14 Count Ciano delivered a noisy harangue in the chamber of deputies in which he reaffirmed the "natural aspirations of Italy" for Jibuti (French Somaliland), Suez (Egypt) and Tunis (Tunisia). Although it was well known that the territorial question was raised with reference only to the French port of Jibuti, terminus of the Addis Ababa railway, a challenge was sensed in the Montecitorio speech which aroused alarm in Europe. A few days later, on Dec. 17, the Italian government renounced the Mussolini-Laval agreement of 1935, under the pretext that France had defaulted in its obligations by adhering to the policy of sanctions.

In the beginning of 1938 Europe was clearly divided into two camps. In May Hitler went to Rome. The meeting of the two heads of government signified that henceforth they were following a personal, or a party, diplomacy.

It was on the occasion of the latter visit that the pope left Rome for his villa at Castelgandolfo, deploring that the eternal city had given asylum to "a cross which was not the cross of Christ." Emboldened by the success he had achieved, Hitler meanwhile was taking the first steps toward the realization of his program of world hegemony.

The first submission of Mussolini to the will of naziism was his consent to the annexation of Austria, which he had so vigorously opposed a few years earlier. The duce was unable to find any justification for this other than to recall how he had been isolated at the time of his first intervention and to conclude sorrowfully that, after all, it was best not to oppose the inevitable.

Mussolini apparently decided, however, that his partner was taking the initiative a bit rashly in dangerous affairs, and he proceeded to re-examine the problem of relations with England, perhaps in order to demonstrate his own independence. On April 16, 1938, in London, a new agreement was signed, in the spirit of the gentlemen's agreement; by this accord Italy recognized the rights of England to the waters of the Blue Nile and reaffirmed the obligation to maintain the status quo in the Mediterranean, thus renouncing any territorial aspirations toward Spain.

Meanwhile, in Germany, agitation over the Sudeten question was beginning. In the face of the danger of a general conflagration, Neville Chamberlain requested the intervention of Mussolini which brought about the Munich meeting in September. At that time the fascist leaders paid no attention to the true attitude of the Italian people, nor did they take note of the relief which greeted the disappearance of the spectre of war, of a war accepted in order to further the ambitions of Hitler. On the contrary, Mussolini was intoxicated by his success, by the great praise which arrived from every part of the world, and he perhaps had the impression that he had taken over the leadership of political events, if not of all Europe, at least of the totalitarian countries.

However, once the euphoria of the first moments had vanished, it was immediately evident that Munich signified merely a momentary pause on the way toward a conflict that seemed inevitable.

Under the pressure of events, the aligning of forces proceeded thereafter automatically, with this difference only, that whereas in Germany the people followed their leader with enthusiasm, the Italian public disagreed more and more with the directives of the fascist government.

The expedition into Albania in April 1939 failed to arouse any new enthusiasm in Italy; abroad it stirred up grave anxiety and opposition.

"Pact of Steel."—Hitler and Mussolini, close allies from then on, concluded, in May 1939, a military alliance which was called the "pact of steel."

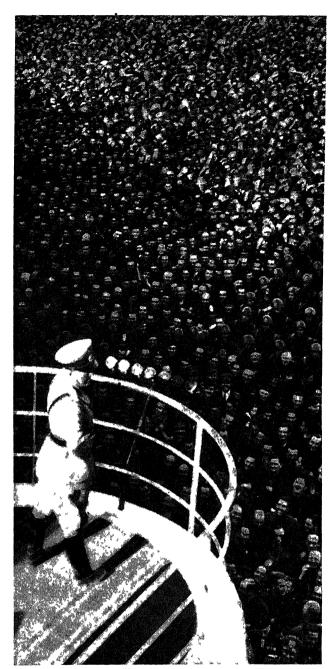
As was revealed later, the duce had requested that, in whatever way war might come, it should not take place earlier than 1942. This reservation was dictated not so much by domestic political considerations as by the knowledge that the armed forces of Italy were absolutely unprepared to embark with inadequate means upon a worldwide conflict. There were some who believed that, behind the theatrical gesture of signing the "pact of steel," Mussolini concealed a desire to postpone the time when the fascist regime should be submitted to the test of a war. He should have known his own strength; and yet, on the other hand, many antifascists held that the lies in the fascist press, the apparent splendour of the military parades and reviews, both air and naval, and the boastful pronouncements of the leader and all his satellites had finally made Mussolini a victim of his own propaganda, that he had, as it were, been blinded by it.

The Italian general staff, which had always, even during the Ethiopian campaign, remained conspicuously apart from the fascist party, was then obliged to enter relations with the German high command. Within the army, these first contacts aroused a wave of aversion rather than of comradeship toward the new allies.

Although public manifestations of disapproval were not possible, discontent was widespread and criticism, wary but insistent, crept into all sectors. It was said that Italy was weary; that the potentialities of East Africa rendered useless any attempts toward further expansion; that the Germans would soon change from allies to masters. Some of the conscripted classes had been under arms since 1933 and had already been through the Ethiopian and the Spanish wars; furthermore there was talk of serious deficiencies in the military potential, the resources of which had been exhausted by two undertakings which should have been of secondary importance for a nation which pretended to be a great military power.

Junior Partner.—When, having concluded his frenzied political activity, Hitler took the initiative in military operations, many throughout the world marveled that Mussolini did not immediately draw his sword by the side of his ally. But this was not surprising to those who knew the situation, least of all to the Germans who had numerous observers in Italy and who were very well informed about the material and psychological condition of the country. Thus, there came about the unexpected announcement of Hitler, at the moment when he set fire to Europe, that he had no need of military assistance from his allies. World War II came three years sooner than the time which had been forecast for the inevitable recourse to violence, in spite of a last minute intervention of Mussolini, who was under the illusion that he might bring about another Munich.

For the second time in history, Germany had confronted Italy with the fait accompli of a war of incalculable consequences, undertaken without its consent. From a juridical point of view there was justification for defaulting the agreements entered into and pursuing an independent policy. But the inertia of Italy after German military operations opened was a serious blow to the prestige of Mussolini, both at home and abroad. In world public opinion there sprang up accusations of bad faith toward alliances; in Italy among the fascists themselves a feeling of moral degeneration began to spread since they did not understand why Italy had failed to intervene after so many thunderous pronouncements. The lightning bolts which, according to Mussolini's wishful thinking, were held aloft by great effort in his hands, now fell to earth at the very



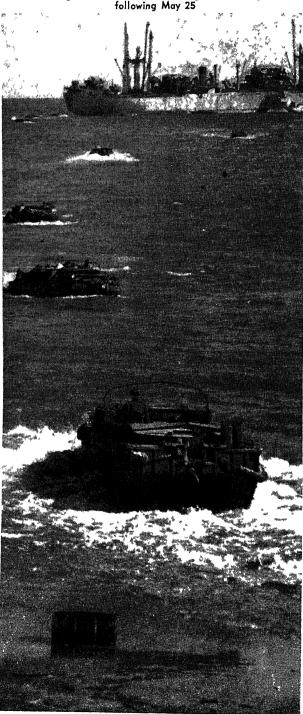
Mussolini striking a martial pose at Treviso on Sept. 21, 1938 as he promised crowds below that Italy would stand beside Germany in any future war

moment when the people were expecting to see them flash. Italy was thus a "nonbelligerent," an expression which meant that its position was not that of a purely neutral state. It is not clear what were the feelings of Mussolini during the first months of World War II. Certainly he was humiliated by the spectacle of the German military power and by the diplomatic successes of the reich. Henceforth, there was no doubt about a reality which he had attempted, probably for reasons of prestige and vanity, to shut his eyes to: the reality of the inevitable dependence of the Italian general staff and of Italian diplomacy upon nazi initiative whenever fascism should decide to enter the struggle. According to an interpretation in his favour, Mussolini was hoping that Hitler would find himself in serious difficulties and that the intervention of Italy, dip-

lomatic or military, would reserve for it a preponderant role in the final decision.

On the contrary, events proceeded at a headlong pace. After the battles of France, the Netherlands and Belgium, after Dunkirk and the lightning advance of the German armoured divisions toward Paris, it seemed to Mussolini that World War II was approaching an end. Without consulting anyone, he wrote to Hitler that he was ready to

Transporting cargo by amphibious trucks from supply ship to the Anzio beachhead in Italy. Allied troops landed at Anzio on Jan. 22, 1944, and fought there until a breathtrough was accomplished the



declare war on England. The German campaign in Norway had convinced him that in modern warfare fleets no longer had their former importance and that the German air force could be the decisive element in the war.

When the leaders of the armed forces, as soon as they were informed of his plans, attempted to restrain him by recalling the very serious deficiencies in military organization and the dangers which would result to the colonies with the merchant marine dispersed on all the seas of the world, Mussolini's reply was that he was the only judge in political affairs and that he needed a few thousand dead in order to have a seat at the peace table: "In September," he said, "all will be over."

Disastrous Decision.—On June 10 came the declaration of war. From the balcony in the Piazza Venezia he appealed once more to the argument which was considered effective in spurring the Italian people along the road followed by fascism: "This is the struggle of the peoples who are poor and eager to work against the greedy who hold a ruthless monopoly of all the wealth and gold of the earth."

Following the manifestation organized by the party, the crowd broke up in silence since all understood the seriousness of the step which had been taken. Furthermore, the Italians felt in their hearts a sense of humiliation and disgust at this declaration of war upon a France which was already mortally wounded.

Mussolini in the meantime had obtained from the king the appointment as commander of the armed forces.

Operations on the western front lasted only a very few days. The Italian war was to be fought more onerously in the Mediterranean and in Africa, where it was immediately evident that the unexpected English resistance to the attack of Hitler would tax all the resources of Italy.

The deed of June 10 which, according to the dictator's propaganda, was to be a mere prelude to the peace conference, placed Italy in the midst of a war whose end could not be foreseen. While East Africa remained completely cut off from all communication with the metropolis, the troops sent into Libya won an initial victory over the English on the Egyptian frontier. For those who believed in the power of Mussolini, this was the beginning of a series of brilliant operations on African soil. But the prolonged inactivity of Gen. Rodolfo Graziani, following the first advances, began to arouse a suspicion, even among the least-informed masses, and then a conviction, that the leaders who were responsible for World War II had done nothing to make adequate preparations. Soon the very serious disasters in Cyrenaica strengthened this feeling of opposition and hostility toward the war, sentiments which already were alive among the Italian people for idealistic, historical and traditional reasons; and this hampered the military efforts of the fascist government. The shamefaced propaganda which aimed to arouse in the Italians a feeling of hatred for peoples whom they had always considered as friends had no effect; neither did the harsh penalties threatening anyone who declared his sympathy with the democracies nor the attempts to win the Italians over to the German program for a new European order. On the contrary, both among the civilians and within the ranks of the armed forces there began to take shape that state of mind which was to give birth to the final catastrophe.

On the other hand—and this was the tragedy of Italy—military defeat symbolized for the Italians the end of fascism; they saw with dismay that although their country deserved to be spared the sufferings of defeat, an axis victory would mean the definitive triumph of fascism.

The struggle between the general staff and the fascist party, that is, between all the military commands and the

government of Mussolini, grew bitter very soon and provoked the withdrawal of Marshal Pietro Badoglio after the opening of the campaign in Greece (an expedition which Mussolini and Ciano had ordered without taking into account the conditions which the military had deemed essential for intervention in the Balkans). The retreat of the marshal was a serious blow for the fascist regime since the public considered the victor of the Ethiopian war as a representative of the Italian military tradition, one who was independent of particular political doctrines and motivated only by the welfare of his country. Now they understood that the command of military operations was passing irretrievably into the hands of the party, which remained alone to fight its war and to sacrifice the youth of Italy by sending them into Africa and Greece with inadequate arms.

Request for Help.—In order to remedy the failures in Africa, Mussolini had asked Hitler for a share of the armoured cars captured in France. The fuehrer replied that he offered not only equipment but two whole armoured divisions. Mussolini's first query was, as the story goes, "How will we liberate ourselves from them?" But his doubts were dispelled in the face of the consternation in Italy and the isolation in which, as he realized, the party had fallen. The spectacle of the German divisions, coming from the north to embark from Naples and Sicily, would be useful, he thought, for domestic purposes.

And so the troops from the reich arrived, and not all of them embarked on the ships heading for Libya. In the north, at Naples and in Sicily, German air bases and commands, depots and departments were installed as though the Germans were on their own property.

It was a repetition of the fatal misfortune of Italian history—the coming of aid, as had happened from time to time, to the conflicting parties from foreign armies. Those officers and soldiers who still had the will to fight could not escape a feeling of distress at the humiliation of having what was for all practical purposes a superior German command placed over the one body of Italian troops which was fighting.

Since the beginning of 1941 Mussolini had felt obliged to make excuses; in one of his speeches he declared that "sometimes history takes one by the throat," thus revealing that he would have liked to postpone the final military effort until 1942.

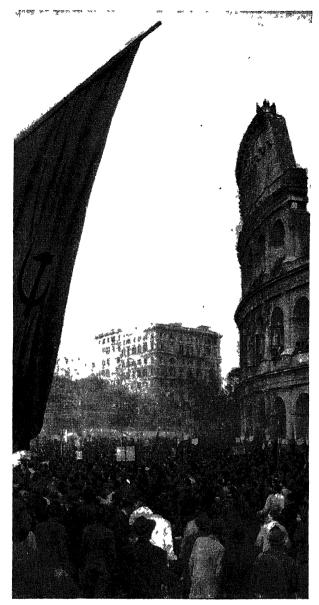
In Nov. 1941 came the declaration of war on the U.S.S.R., and the dispatch of several divisions to the Don river, a decision of Mussolini's, who perhaps intended by that means to repay his debts toward his ally. (See WORLD WAR II.)

The Italian soldiers fought without enthusiasm but courageously in Russia and throughout the changing vicis-situdes of the struggle in Africa.

There were notable examples of valour both on the sea and in the sky, where the pilots tried by courage and skill to compensate for their defective equipment. But these were individual efforts, performed in a spirit of competition or for military glory, not because of any faith in ultimate victory.

The futility of so many sacrifices, at such great cost, had for some time provoked in Italy a bitter resentment toward Mussolini, and popular reaction would not have waited for the Anglo-U.S. invasion of Sicily had it not been intimidated by the presence of German troops allied to fascism.

For at that time the ancient political parties were secretly attempting to regroup their followers around the leading exponents of antifascism in order to be ready to assume



Protest demonstration by Romans bearing communist banners before the Colosseum on March 6, 1945, after the escape of Gen. Mario Roatta, imprisoned as a war criminal. A riot ensued at the Quirinale in which demonstrators clashed with armed carabinieri

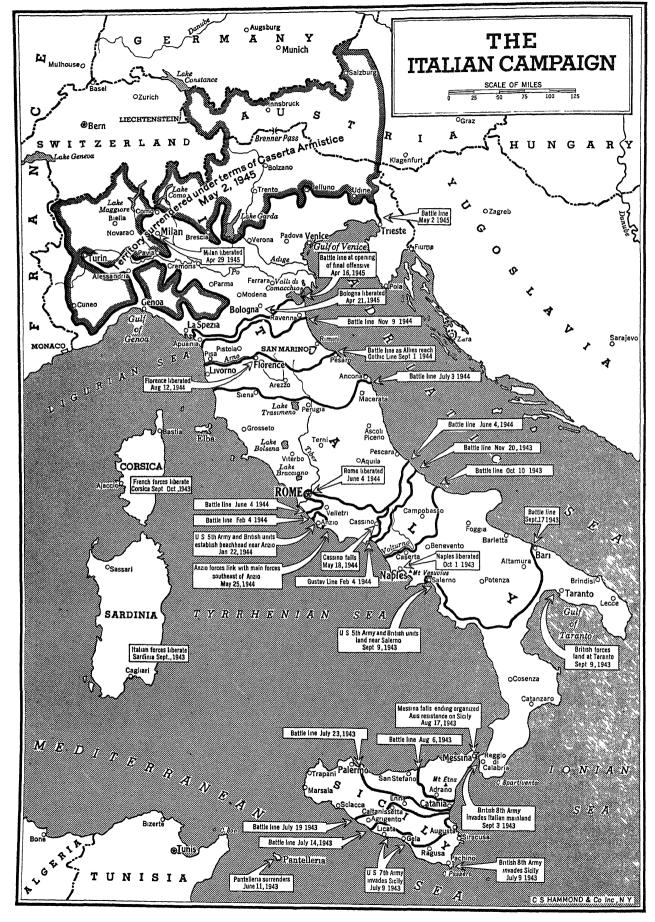
their responsibilities whenever the collapse of the regime should permit the reorganization of Italy on a democratic basis

Mussolini understood that the moment was decisive and sought an interview with Hitler, to whom he wanted to explain the conditions which were forcing Italy to withdraw from World War II. The meeting took place at Feltre, July 19, 1943; it brought no result whatsoever, since the duce lacked the courage to mention a separate peace.

The Italians understood that it was necessary, for better or worse, to come to a decision.

Among the various groups which were striving to seize the initiative in the reaction against the fascist system, success fell to the military group under Marshal Badoglio, who had maintained contacts with the antifascists since 1942.

Duce's Downfall.—After the Anglo-U.S. invasion of Sicily, it looked as if the German position were sufficiently shaken to permit an attempt toward liberation from the fascist



regime and from its foreign supporters. The heads of the party also understood that there was no time to lose in view of the rapid turn of events; during the night of July 24–25, 1943, the grand council placed the duce in a subordinate position by summoning the king to make the decisions which were demanded by that grave hour.

The following day the king invited Mussolini to resign. As he emerged from the Villa Savoia he was arrested by carabinieri.

The task of forming a new government was entrusted to Marshal Badoglio. Meanwhile, a crowd was attacking the headquarters of the fascist party, demonstrating tumultuously through the streets of the capital until late at night.

The situation of Italy was tragic. Its military strength was represented on home soil by a few poorly armed divisions, while the greater part of the troops were scattered in Libya, France, Croatia, Albania and Greece.

The Germans, on the other hand, had eight divisions in Italy, of which four were armoured; all were equipped with abundant supplies. Italian air power remained with only 400 aeroplanes as against twice that many German units. After July 26 numerous other nazi forces began to descend into Italy through all the Alpine passes. The Allies had not yet opened the attack on the peninsula.

In spite of the official declaration whereby the new government declared its intention of continuing World War II, no one doubted that the fall of fascism must symbolize, sooner or later, the separation from Germany.

At this time there arose differences of opinion between the antifascist political leaders and the military advisers of the king. The political leaders wished to break with Germany immediately; they counted on the psychological factor of insurrection, which would in their opinion induce the Allies to bring aid at once. The military was afraid of Germany and feared that the Allies were not prepared to invade Italy.

Double Occupation.—How were the Italians to free themselves from the Germans who were occupying their country with overwhelming forces? Whatever happened, the national soil was destined to be transformed into a battlefield and to suffer systematic destruction by both opponents in accordance with the inexorable laws of war. And, indeed, all the way from Sicily and the southernmost tip of Italy to the Alpine circle, comparatively little ground was to be spared.

After Marshal Badoglio had made arrangements for direct contacts with the Allied command, an Italian general was sent to Lisbon, Portugal, where a first meeting was held. On Sept. 8, 1943, the armistice was agreed upon, following negotiations which were too long and permitted the Germans to bring down reinforcements.

The king and Marshal Badoglio decided in the meantime to remove the seat of government to the south, and they succeeded in reaching Brindisi. As a political move, the abandoning of the capital dealt a serious blow to the prestige of the monarchy since the people desired a defense at whatever cost as a gesture of heroism and steadfastness; however, whether defense would have been possible and whether the Allies were really in a position to make a decisive intervention was not known.

From the new provisional capital, Badoglio hoped, relations between the Italian government and the Allied command would be strengthened; the latter declared that the armistice remained in full force but that the conduct of Italy might lead to mitigation of its provisions.

The Italian command thought that the greatest possible effective contribution toward World War II was desired, and—although this was not a condition of the armistice—

war was immediately declared on Germany. This act resulted in recognition of cobelligerency by the Allies.

The fleet had loyally carried out the terms agreed upon and had collected important forces in Malta and other ports. These were immediately engaged in military action or in escort duty, thus permitting the transfer of a large Allied fleet to other waters. During these operations the Italian navy suffered notable losses in men and matériel.

The troops in France, Croatia, Montenegro and Greece received orders to join the partisans. The contingents in Sardinia and Corsica drove out the Germans there. In the north began the widespread resistance movement which was to have an impressive development and to constitute an effective contribution to the Allied victory in Italy.

An Italian motorized force of 5,200 men (later expanded to 21,000) immediately joined the U.S. 5th army.

As for the air force, Winston Churchill proposed to furnish better equipment to the courageous pilots of Italy. All this recognition spurred on the desire, already lively, to contribute to the war against the Germans in an ever-increasing degree.

However, in spite of excellent evidence of military collaboration, the Allied command did not encourage further Italian participation in World War II. Thinking that this refusal resulted from the difficulty Italy had in furnishing war equipment, the Badoglio government offered several divisions and a few special forces which were reorganized and equipped exclusively with Italian supplies. Still the answers were negative. A large part of the Italian arms was sent into the Balkans.

Nor was adequate use made of the prisoners who were in Allied hands (more than 1,000,000, counting the civilians of East Africa) although many of them requested enlist-

"Good Riddance" was the reaction of Werner in the Chicago Sun to the Italian plebiscite held in June 1946, which resulted in a 5–4 decision against retaining the monarchy





First session of the Italian Constituent assembly which opened at Rome on June 25, 1946. Premier Alcide de Gasperi, head of the provisional government, is shown addressing the assembly

ment. The only forces welcomed by the Allies were the numerous soldiers employed in service behind the lines and in coastal and anti-aircraft defense, as well as more than 1,000,000 soldiers and prisoners employed as labourers. One of the plausible explanations of this negative attitude was undoubtedly the fact that the Allies hoped they could swiftly, with their own armies, overcome German resistance in Italy.

Under the double occupation (Allied and German) the amount of money in circulation multiplied at a dizzying rate, as a result of the simultaneous issuing of currency by both groups of belligerents. While in the south large imports of am-lire (Allied occupation lire) were put into circulation, in the north the Germans and the fascist government were printing money at an ever-increasing rate in order that higher wages might attract northward the great mass of Italians who had preferred to remain in the south so as not to collaborate with the Germans. The devaluation of money, the upward spiral of prices, corruption and the black market became phenomena associated with the war and the postwar period.

Thus, the new Italy took its first steps with some difficulty: the Italian government was weak since its powers were limited by the armistice and since it was hampered by interferences of the Allied Military government (A.M.G.); communications were lacking and confusion was general.

In Dec. 1943 the Badoglio government had moved from Brindisi to the city of Salerno. The aged members of parliament and the professional men who composed it won the complete confidence of the Allies and little by little they brought about the restitution of liberated territory to the Italian administration.

In the meantime, President Roosevelt had been urging

the formation of a democratic government in which all the antifascist parties should collaborate. Representatives of these parties assembled in Bari in Jan. 1944 and unanimously demanded the abdication of the king. After laborious negotiations, the king accepted the solution of abdicating in favour of Prince Humbert as soon as the capital was occupied.

Immediately after taking office, Prince Humbert received the resignations of the cabinet and entrusted the task of forming a new government to Marshal Badoglio. The heads of the various parties declared, however, that they did not consider it fitting to retain a military man who did not belong to any political party as head of the government; thus, they brought about the formation of the first cabinet of Ivanoe Bonomi which moved to Rome in early July (the capital had been taken by Allied troops on June 4).

Political Legacies of the War.—After V-E day and the liberation of the north, when it became desirable to have representatives of all the provinces participate in the government, the new coalition government of Ferruccio Parri was formed (June 1945). Professor Parri had always been a fervent antifascist and had played a dangerous and active role as a leader of the partisans in northern Italy during the period of clandestine resistance.

By Sept. 1945 the various parties had nominated representatives, called *consultori* (counsellors), who took their seats in the chamber of deputies with the task of preparing the way for political elections to nominate representatives to the constituent assembly. In Dec. 1945 a crisis provoked by the Liberal party led to the formation of the new coalition government headed by the Christian Democrat leader, Alcide de Gasperi.

On all sides there were pressing tasks of reconstruction; and against the absorbing background of the peace conference other serious problems relating to the constitution and governmental institutions appeared menacingly.

But in spite of the grave state of affairs at that time, the popular will had an opportunity to manifest itself on June 2, 1946, in a manner so decisive that it surprised all those who believed that the Italian people were not prepared to exercise the privileges of democracy. The referendum decided in favour of a republic; at the same time the chamber of deputies to the constituent assembly was born, in which the Christian Democrat party won the majority of places, with the Socialists and Communists also heavily represented.

This election brought about the formation of a new tripartite government supported by the mass parties and again headed by De Gasperi.

In the meantime, the conferences of London, Paris and New York were preparing the peace treaty. Already in Sept. 1945, a small delegation, presided over by De Gasperi, then minister of foreign affairs, had been invited to London to present to the four foreign ministers the point of view of Italy on certain problems relating to the peace treaty, particularly on the question of Venezia Giulia, which was the most serious and delicate of the whole treaty. While recognizing the obligations inherited from the fascist period, Italy also disassociated the responsibility of the Italian people from that of Mussolini; it declared itself willing to renounce the eastern frontier which had been assigned to it by the treaty of Rapallo and requested that the new frontier be drawn along the line proposed by Pres. Woodrow Wilson in 1919.

The Italian suggestion was largely accepted since it was decided at London to adopt the ethnic principle as the criterion for drawing the new frontier and to send an appointed commission, in case of need, to the area for the necessary information. After eight months of toil the commission presented the foreign ministers with the findings of the investigation. The result was that there were four ethnic lines (the U.S., the English, the French and the soviet.)

In the second half of June 1946 the thread of a laborious compromise among these four lines was woven, with Italy remaining powerless to intervene in any way. When the conference of the Big Four closed, the public was surprised by the presentation of a new plan which departed entirely from the ethnic criterion agreed upon at London.

Thus was born the new formula for the internationalization of the territory of Trieste, with the . transfer to Yugoslavia of cities of the western coast of Istria which were recognized as Italian (Pola, Parenzo, Rovigno). The Paris conference also determined the rectification of frontiers in favour of France (against which Italy had objected in vain), fixed the amount of reparations and settled the questions of the fleet, the armed forces and the colonies in

a manner contrary to Italian hopes.

At the conference of 21 nations which convened in Paris shortly afterward, the major decisions agreed upon by the Big Four did not undergo substantial modifications, nor was there any opportunity for Italy to negotiate. The good will of a few individual statesmen of the United Nations was not able thereafter to attenuate the punitive character of the treaty. (See also Albania; Anti-Semitism; Fascism; Italian Colonial Empire; Navies of the World; World War II.) (A. D. G.)

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1938 1942				
ltem	Value (000's omitted)	Amount or Number	Value 000's omitted	Amount or Number
Exchange rate				
United States		1 lira =		
		5.26 cents		
Great Britain		92.7-94.8		
		lire = £1		
Finance				
Government revenues	\$1,444,954 (£295,552)		\$2,476,537*(£613,764)	
Government expenditures			\$6,852,916* (£1,698,368) \$130,611* (£32,370))
Gold reserves	\$193,271 (£39,532)		\$130,611*(£32,370)	
Transportation				
Railroads		14,184 mi.		
Highways		38,720 mi.		
Communication		28,468 mi.		
Telephones		611,254		585,125†
Telegraph lines		41,475 mi.		42,274 mi.†
Minerals		-,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		42/2/ 4 11111
Sulphur		2,605,723 tons		2,175,499 tons†
Pyrites		1,025,483 tons		1,127,728 tons†
Marble		503,996 tons		342,637 tons†
Zinc ore	•	221,395 tons		211,838 tons†
Coal		1,777,125 tons		2,637,497 tons†
Mercury ore		215,525 tons		290,446 tons†
Lignite		962,308 tons		2,256,439 tons†
Crops		0.010 501 4		7020 040 1+
Wheat		8,919,591 tons 4,598,465 tons		7,030,840 tons‡
Sugar beets		3,586,113 tons	•	6,084,569 tons‡ 3,303,672 tons‡
Potatoes		3,252,557 tons		2,508,686 tons
Corn		3,236,683 tons		2,399,191 tons‡
Forest products		0,200,000		_,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
Firewood		4,138,591 tons		6,001,772 tons†
Charcoal		642,996 tons		965,834 tons†
Livestock				
Sheep		9,467,400		9,422,000
Cattle		7,666,890		8,372,000
Swine		2,940,440		3,725,000
Goats	\$550 000 (C) 10 505\	1,828,070	\$813,631 (£201,643)	1,727,000
Exports—Total	\$550,038 (£112,505) \$37,939 (£7,760)	47,000 tons	\$17.601 (£201,043)	2,000 tons
Artificial fibres	\$19,168 (£3,921)	25,000 tons	\$17,691 (£4,384) \$17,201 (£4,263)	11,000 tons
Almonds	\$18,264 (£3,763)	37,000 tons	417 J201 (204)200)	11,000 10113
Fresh fruit	\$17,058 (£3,489)	203,000 tons	\$16,049 (£3,977)	96,000 tons
Imports—Total	\$592,900 (£121,272)	• • •	\$712,073 (£176,474)	•••
Coal	\$90,188 (£18,447)	13,134,000 tons	\$102,665 (£25,444)	11,533,000 tons
Cotton (raw)	\$43,542 (£8,906)	175,000 tons	\$642 (£159)	1,000 tons
Mineral oils and products	\$34,572 (£7,071)	2,686,000 tons	\$45,996 (£11,399)	822,000 tons
Wood products	\$20,555 (£4,204)	291,000 tons	\$19,390 (£4,805)	375,000 tons
Defense		0.7001		0.040.0005
Standing army personnel		917,991		2,860,000§
Reserves		6,494,117 55,836		4,555,000§
Standing navy personnel Standing air force personnel		103,555		265,340§
Reserves		331,428		105,550§
Military expenditures	\$272;777 (£55,794)	331,720	\$397,983§ (£103,912)	100,0008
Education	+=. 2/1// (200// F4)		Ţ,, (), ()	
Public and private elementary				
schools		135,994		139,571 5,110,328
Students		5,544,271		5,110,328
Secondary schools		:::		<i>5,</i> 136
Students		647,505		556,260
Universities and institutes		77,429		35
Students		1/429		164,863
*1942. †1941.	‡1944.	§1940.		
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Italy: Statistical Data

lwo Jima

The battle for Iwo Jima in 1945 was the bitterest in 170 years of illustrious U.S. marine corps history. The conquest of that heavily defended island represented the empirical test of the amphibious assault technique which otherwise had been so successful throughout World War II.

Iwo Jima offered no opportunity for surprise, little opportunity for manoeuvre. Its capture was a task for specialists.

It clearly demonstrated the narrow margin which divides success from failure.

That the marines were successful at Iwo Jima was manifest, that the techniques they employed were sound could not be questioned. While the marines' devotion to the amphibious specialty had its beginning in the early days of the U.S. war for independence, a strong resurgence followed World War I.

During that period, while most of the world's armed forces were engaged in study of the first world war—thinking mainly in terms of trench warfare and great continental wars of position—the U.S. marines applied themselves, with singular faithfulness, to the manifest problem of assaulting a fortified beach.

Iwo Jima, considered by the Japanese as the main island



Advancing under murderous Japanese fire, U.S. marines of the fifth division took this ridge on the beach of Iwo Jima near Mt. Suribachi (left background) during the invasion of Feb. 1945

in the Nanpo Shoto group, was the key to the entire defense system in that group. This small island lay astride the bomber route to Japan. From its airfields U.S. planes were attacked. It had been converted into a powerful fortress. Beach defenses were organized in depth. Tactical locations were covered by all available weapons. Defenses consisted of reinforced concrete pillboxes, heavy guns emplaced in concrete, tank traps, mortars, mobile artillery, concealed caves and land mines. Beaches consisted of loose volcanic sand which, coupled with steep terrain, offered serious obstacles to men and all forms of transportation and tracked vehicles. Lieutenant General Tadamichi Kuribayashi with an estimated force of 22,000 commanded.

From June 15, 1944, until Feb. 19, 1945, naval aircraft and surface vessels assisted by heavy bombers of the 7th army air force engaged in softening up the defenses.

Admiral Raymond A. Spruance, 5th fleet, commanded the Iwo Jima operation with Vice-Admiral Richmond K. Turner as commander of the joint expeditionary force. Lieutenant General Holland M. Smith, commanding general fleet marine force, Pacific, commanded the expeditionary troops' headquarters. The 5th amphibious corps, which composed all of the actual landing force, commanded by Major General Harry Schmidt, consisted of the 3rd, 4th and 5th marine divisions. The operation was an all-navy one, with Major General Schmidt's marines making the amphibious assault. On Feb. 19, 1945, after a heavy bombardment from naval vessels and aircraft, eight battalions of the 4th and 5th divisions landed abreast on the eastern beaches. All eight battalions were ashore at 10:30 A.M. By 2:40 P.M., four regimental combat teams and both division tank battalions were ashore.

Shortly after landing of the first waves, heavy resistance developed. By 6:00 P.M. the 5th division had crossed the neck of the island and isolated the Mt. Suribachi stronghold. The 4th division had extended its beachhead 400 yd. On Feb. 23, Mt. Suribachi was captured after some of

the most bitter fighting in history. Two days later, the 3rd division, less one regiment, occupied the centre of the line, with the 4th division on the right, the 5th division on the left. The seizure of the airfields, the slow pulverizing attacks until the break-through to the sea and the final pocketing of a small number of remaining Japanese in the northwestern corner of the island ended organized resistance on March 16, 1945. The destruction of the Japanese force was accomplished by resolute troops led by experienced officers and noncommissioned officers. Only such type of troops and leadership could have overcome such a fanatical enemy.

The U.S. casualties were 4,907 dead and 15,500 wounded. The Japanese dead were 21,500 with 217 prisoners of war. The capture of Iwo Jima gave greater "Superfort" efficiency, increased the bomb tonnage of planes from the Marianas and gave fighter protection to the B-29s. In three months from March 4, when the first B-29 made an emergency landing on Iwo, a total of 852 B-29s, worth some \$510,000,000 and carrying 9,361 men, made emergency landings at Iwo. (See also Marine Corps, U.S.; World War II.)

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Jackson, Robert Houghwout

Jackson (1892—), U.S. jurist, was born Feb. 13, 1892, at Spring Creek, Pa. Following his graduation from Albany Law school, he was admitted to the New York bar in 1913 and practised law in Jamestown, N.Y. As counsel and in other official capacities, he served railroad, banking and telephone companies. In 1934 he was general counsel for the bureau of internal revenue in Washington, D.C. By appointment of President Franklin D. Roosevelt, he served as U.S. assistant attorney-general from 1936 to 1938, as solicitor-general from 1938 to 1939, and as attorney-

general in 1940–41. Jackson was made an associate justice of the U.S. supreme court on June 12, 1941. In May 1945 President Harry S. Truman named him chief U.S. counsel on the international military tribunal to try axis war criminals. In June 1946, while Jackson was at Nuernburg, Germany, presiding at the trials, he brought into the open a supreme court feud of long standing between himself and Justice Hugo Black following the appointment of Fred M. Vinson as chief justice of the court.

Jamaica

See WEST INDIES, BRITISH.

James Tait Black Memorial Prizes

See LITERARY PRIZES.

Japan

For Japan the years 1937–46 saw the fruition—into total war and total defeat—of traditional tendencies in Japanese life as they were guided by Japan's leaders to create an expansionist state; and the emergence of a new Japan turning from the past toward democracy and a peaceful future.

It is debatable to what extent supposed Japanese belief in the sacredness of the emperor and the divinity of Japan's world mission was a determining factor in the nation's disastrous course. The Japanese sense of economic inferiority received from the national myths a consolation that had some religious characteristics, and the desire of the Japanese militarists and their collaborators to seize from others what Japan wanted and did not possess found a convenient excuse in them. Thus the propaganda value of the myths was high, and they supported the community of men who controlled Japan's military, economic and political life. But there were other factors more concretely significant to Japan's development into a war machine: the interdependence of the militarists and economic monopolists who had predominated throughout Japan's modern history; the circumstance that much of the army came from the farming population and developed a group consciousness seeking alleviation of the peasants' lot through economic nationalization within Japan and rich conquests without (the army's slogan, "Manchuria is the lifeline of Japan" was an example); the extraordinary persistence characterizing the Japanese when he sets himself a goal; the islanders' instinctive fear of attack from without; the feudalistic loyalties which governed the family as the smallest unit of the state and the concomitant submergence of the individual and of broad ethical considerations; the habit of community thinking reinforced by the controls of the police state; and ignorance and misinterpretation of the character, psychology and ability of other peoples and of their resources and industrial potentialities.

The place of the emperor in the national polity was, of course, a factor of importance because of the misuse made of the throne by the military and the reverence in which the emperor as the symbolic father of the Japanese national family was universally held by the people, whether or not the individual believed the mythology. Also of importance were the faults of the Meiji constitution, which permitted Japan's rulers to disregard the diet and the rights of the people in general. The cabinet was not responsible to the diet and the house could not even control the budget; the lower chamber could be dissolved and the upper prorogued by imperial decree. One of the most vicious aspects of the system was the right of direct access to the emperor by the chiefs of staff of the army and navy without reference to the prime minister. (This was

not an affirmative fault of the constitution but was a right established by the rules of the cabinet, promulgated in 1889, which gave the war and navy ministers direct access; the privilege was later extended by custom to the chiefs of staff.)

The year 1937 opened with a successful test of political strength by the Japanese army, and from then on the philosophy of conquest which had its first expression in the abortive movement to invade Korea in 1873 was practically supreme. Those responsible for the London naval treaty had long since been driven out of power. Japan was free of naval commitments, and any lingering advocacy of a moderate foreign policy had been eliminated. Certainly big business had no quarrel with aggression as an instrument of national policy. The Zaibatsu were copartners in it with the military, and in 1937 there was no group among the economic monopolists which stood against a policy of military expansion from which they profited. In the middle of 1937, a minor clash between Japanese and Chinese troops at Marco Polo bridge near Peiping on July 7 set off Japan's undeclared war on China.

By that time Japanese military, political and economic aggression against China after 1931 and the growth of Chinese unity and nationalism—including "anti-Japanism"—had created a situation in which the Japanese momentum toward war had become so concentrated that any clash would probably have resulted in general hostilities. The ensuing "China affair" likewise carried the Japanese along a course which meant inevitable war with the U.S. and the other nations which became the Allied military opponents of Japan.

Progressive Japanese military operations in China had as a corollary progressively flagrant and widespread violation of the rights of western nations, as well as the destruction of foreign lives and property through relentless bombing of civilian and nonmilitary objectives. The sinking of the U.S.S. "Panay" in Dec. 1937 was an indication of how far individual Japanese military commanders were prepared to go. The tension between the U.S. and Great Britain on one hand and Japan on the other continued to grow without alleviation as the Japanese persisted in their aims irrespective of the rights of others, and the U.S. insisted upon the upholding of fundamental principles of international law and conduct.

In world politics, Japan abandoned its previous alignment with the democratic nations and definitely placed itself in the fascist bloc by accepting Italian adherence in Nov. 1937 to the Japanese-German anti-Comintern pact of 1936. A year after the outbreak of war in Europe the anti-Comintern pact was developed into the tripartite treaty by which Germany, Italy and Japan agreed to "stand by and co-operate with one another" in their efforts to establish so-called new orders in Europe and in east Asia. Four years after the clash at Marco Polo bridge, Japan attacked the U.S. because the U.S. continued to refuse to yield on principles whose abandonment would have meant, inter alia, the sacrifice of China.

Prelude to Aggression.—At the beginning of 1937, the army had been for some time the dominant political force in Japan. But its interference in domestic affairs (particularly the attempted military coup of Feb. 26, 1936, and the rumoured army plans for diet and administrative reforms which would completely emasculate parliamentary government) had provoked strong reaction from the political parties and the more conservative elder statesmen. The burden of the army's increasingly ambitious plans

for the exploitation of Manchuria, the procession of evergreater budgets with consequent rise in taxes and price inflation, the effects of the army's economic program of state socialization and national self sufficiency, and "unfavourable" trade balances—all alarmed influential business circles, although this was increasingly balanced by the influence of monopolistic interests which benefited from the army's rearmament program.

There was also concern over the deterioration in Japan's international position. The anti-Comintern pact (Nov. 25, 1936), sponsored by the army, and the lapsing (on Dec. 31, 1936) of the Washington and London Naval treaties increased Japan's estrangement from the democracies and soviet Russia. Most immediately important was the impasse that had been reached in relations with China, where anti-Japanese sentiment had reached widespread proportions. Prolonged conversations with the Chinese government in the autumn of 1936 for settlement of outstanding issues (chiefly Japanese desire for "economic collaboration," and suppression of communism and anti-Japanese activities) had been wrecked by the uncontrolled activities of the Japanese army in north China. Faced by continuing Japanese army pressure to broaden the autonomy of the provinces of Hopei and Chahar, by the Japanese army's creation of a puppet regime in Inner Mongolia and by the flouting of China's administrative authority through large-scale smuggling and narcotic operations by Japanese and Koreans, the Chinese government took the position that there must be a political settlement effecting restoration of China's administrative rights before there could be agreement on economic matters.

The Chinese government took this strong position for a number of reasons. The long-developing crisis in the Japanese government came to a head in the diet on Jan. 21, 1937, when Kunimatsu Hamada, a Seiyukai member, assailed the fascist tendencies of the army. Minister of war Hisaichi Terauchi demanded dissolution of the diet and, not succeeding resigned, thus forcing the fall of the Hirota cabinet. The next few days clearly demonstrated who were in control of Japan. Although the imperial mandate was given to General Kazushige Ugaki (who had a liberal reputation and was on good terms with the political parties), the army leaders refused to fill the post of war minister and thus made it impossible for him to form a cabinet.

General Senjuro Hayashi, acceptable to the army, formed a cabinet Feb. 2. Continuing criticism by the political parties impelled the government to dissolve the diet on March 31 as a "disciplinary" measure. The two leading parties, the Sevyukai and Minseito, made common cause against Hayashi and fascism, resulting in overwhelming defeat for the government and its resignation at the end of May.

The election of 1937 was the last prewar gesture of liberalism in Japan. The army and heavy industry were cementing their coalition. Leadership of the liberal groups was not united and contained strong nationalist elements. Realizing Hayashi's political blunders, the reactionaries called for a "national union" cabinet. With army behind-the-scene support, Prince Fumimaro Konoye formed what was claimed to be such a government on June 2 with a solid reactionary bloc holding the main portfolios. The future was soon decided by the actions of the Japanese army.

Undeclared War on China.-It had been an open question for several years whether Japan's expansion on the Asiatic mainland would bring it first into open conflict with China or the U.S.S.R. While soviet Russia had strengthened its position in Siberia and had shown an increasingly stiffening attitude, there was a general feeling in Japanese military circles that the communist purges in 1936 and early 1937 had greatly weakened the Red army. Apparently as a test of soviet strength and attitude toward the coming hostilities in China, the Kwantung army late in June 1937 provoked an incident over the possession of several small islands in the Amur river bounding Manchuria and Siberia. The soviet government took a conciliatory attitude and withdrew its forces from the islands, and the Japanese decided that soviet Russia presented no serious menace.

Meanwhile, tension was growing in China, where it seemed for some months that the Japanese had been marking time.

During the first week of July 1937 there was a continuous infiltration into Peiping of Japanese hirelings in plain clothes. On the night of July 7 a clash occurred at Marco Polo bridge, a few miles from Peiping, between a Japanese detachment and Chinese patrols. The Japanese de-

Nazi-styled toast in Tokyo to the Japanese-German-Italian pact signed Sept. 27, 1940, offered by (left to right) Italian Ambassador Indelli, Japanese Foreign Minister Matsuoka, German Ambassador Ott and Heinrich Stahmer, a special nazi envoy



tachment had no legal basis for its presence in the area. Three weeks of inconclusive local negotiations and local clashes ensued and, notwithstanding several truce arrangements and Chinese agreement in principle to Japanese demands, the Japanese began bringing several thousand additional troops into north China from Manchuria. At the end of July the Japanese forces launched a general attack and quickly occupied Peiping and Tientsin. There followed a brief lull in the north, but heavy fighting broke out on Aug. 13 at Shanghai between Chinese troops and the large Japanese marine garrison stationed there after the hostilities of 1932. Nanking was bombed Aug. 15 as the beginning of a Japanese air offensive in the lower Yangtze region. Large reinforcements were sent from Japan, and the offensive was undertaken over a wide area. A small group of soviet planes assisted the meagre and rapidly diminishing Chinese air force for a few months, and some soviet supplies were delivered through Hsinking.

Japan was unresponsive to offers by the U.S. and Great Britain to use their good offices toward reconciliation with the Chinese government, and practically ignored pleas by the foreign ambassadors in Nanking, headed by U.S. Ambassador Nelson T. Johnson and supported by the German Ambassador, Oskar Trautmann, to treat Nanking as an open city.

On Oct. 6, 1937, the League of Nations assembly adopted a report that Japanese military operations against China were out of proportion to the incident which occasioned the conflict, and that Japan's actions contravened its obligation under the Nine Power treaty and the Pact of Paris. On the same date a second report was adopted by the assembly in which it was concluded that the parties to the Nine Power treaty should be invited to initiate consultations in regard to the application of the stipulations of the treaty; that the assembly should express its moral support for China; and that members should consider how far they could extend aid to China. (The U.S. supported the assembly's conclusion.)

On Oct. 9, the Japanese foreign office announced that the actions of the league and the U.S. were due to lack of understanding and that China started the hostilities, that Japan had no territorial designs and had not contravened any treaties; and that the Chinese government was a menace to world peace.

In conformance with a provision of the Nine Power treaty of 1922, 19 nations, including the U.S., participated in a conference convened at Brussels to consider peaceable means for ending the conflict. The U.S. delegate was instructed that, to avoid a serious clash with Japan, some practical means must be found to check Japanese conquest, that the conference might be an agency to bring about moral pressure upon Japan to effect a change in attitude and policy. Japan refused to participate. The U.S. delegate reported at the conclusion of the conference that Japan was unwilling to resort to conciliation and insisted that its issues with China were exclusive, whereas the conference powers, except Italy, affirmed that the Sino-Japanese conference was of concern to all nations. A declaration to this effect was adopted Nov. 24, 1937.

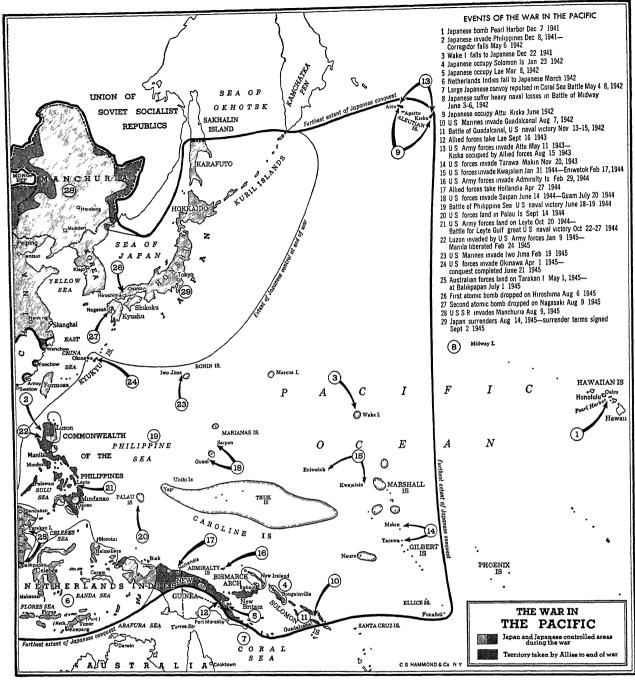
The war went on. Japanese naval contingents occupied the principal coastal ports; the main Chinese defense was broken in Nov. 1937 by a surprise landing in Hangchow bay which outflanked the exhausted Chinese forces. Nanking was captured Dec. 13, and the victorious Japanese indulged in an orgiastic campaign of murder, rape and pillage against the civil population which will be remembered as one of the blackest pages in the history of the Japanese army. On Dec. 12 Japanese planes sank the

U.S.S. "Panay," which had moved upriver, and attacked two British gunboats. Japanese "peace proposals" were put forward through the German ambassador in China but were rejected to the surprise of the Japanese military, who had apparently not planned a campaign west of Nanking and thus let the Chinese armies extricate themselves and re-form.

Principal cities of north China and railway lines had long since been occupied, with chief resistance from communist and other guerrillas. Hsuchowfu was captured in May 1938 and a campaign was launched against Hankow, the new provisional capital. By breaching the Yellow river dikes, the Chinese prevented the Japanese from using the Peiping-Hankow and Lunghai railways and forced them to fight up the Yangtze valley. In south China, Canton fell on Oct. 21, 1938, and Hankow on Oct. 27. But the Chinese were not beaten. As Chiang Kai-shek stated, they had been "trading space for time" and the Chinese government now sat in Chungking, the Japanese being held back by the mountainous terrain. While Chungking and other places were mercilessly bombed and the Japanese twice occupied and quit Changsha, the war developed into a virtual stalemate. Completion of the Burma road let in U.S. supplies, and a U.S. air route to Kunming was so developed in 1944-45 that planes were carrying three times as much cargo as had gone over the road before the 1942 Japanese Burma campaign closed it.

In 1943 Japanese troops in China and vessels in nearby waters suffered increasing attrition by the U.S. 14th air force under Gen. Claire Chennault, based at Kunming. In 1944, Chinese troops trained by Gen. Joseph Stilwell made it possible for the Ledo road and pipe line to be pushed through, and in the middle of that year B-29s based near Chengtu began attacks on Kyushu. Drives by Japanese land forces in the late fall of 1944 eliminated principal air bases in the southwest except Kunming, and in Dec. the Japanese drove to Kweiyang, one day's motor journey from Chungking, but subsequently withdrew. From then on no large-scale land operations occurred. (See also WORLD WAR II: Chinese-Japanese War.)

Domestic Scene, Pre-Pearl Harbor.—During the period from Aug. 1937 to Dec. 1941, a rapid development of economic and political mobilization and regimentation occurred which, coupled with alignment with the axis, pointed with increasing directness toward war with the western powers. A succession of controls were put into effect regulating trade, prices, industry, capital investment, foreign exchange and labour. Cartelization was completed by establishment of control associations for industries (including the natural resources industries). The first Konoye cabinet (June 4, 1937) put through some 86 bills in March and April 1938 to strengthen the war effort, including the National General Mobilization law, which laid the foundation for a command total-war economy by providing a legal basis for state control of capital, industry and labour. Two months later, Konoye "strengthened" his cabinet by selecting Seishiro Itagaki, ruthless commander in north China, as war minister and General Sadao Araki, a notorious chauvinist, as minister of education. Konoye dismissed Foreign Minister Ugaki in Sept. because of the latter's failure to come to agreement with the war office over administration with respect to China, a question which caused the cabinet to fall at the end of 1938. In his second cabinet, formed in 1940, the anti-U.S. jingoist, Yosuke Matsuoka, was foreign minister and Hideki Tojo was minister of war with Kiichiro Hiranuma, a



strong reactionary, as home minister; Koichi Kido became lord keeper of the privy seal.

On Dec. 12, 1937, the U.S.S. "Panay," a river gunboat carrying the remaining U.S. embassy staff at Nanking and a number of civilians, was bombed by Japanese planes and sunk 25 miles up the Yangtze river from Nanking. The attacking planes machine-gunned survivors going ashore in small boats and later searched for them along the river banks. Three Standard Oil tankers were also bombed, and air attack was directed against two British gunboats and a British passenger ship and hulk carrying foreign refugees further downstream; H.B.M.S. "Ladybird" was shelled at Wuhu. The Japanese authorities had requested that foreign vessels move from Nanking, and the "Panay," which had gone up river two miles on Dec. 9 as Japanese troops began to enter the capital and heavy bombing was in progress with bombs falling in the river,

was forced from its new anchorage by shellfire from shore on the morning of the 12th. The senior diplomatic officer on board, George Atcheson, Jr., radioed the Japanese authorities the position at which the ship was anchored and yet it was bombed several hours later. There was reason to believe that the Japanese government was not directly culpable, and that the attacks were due to orders to bomb all ships between Nanking and Wuhu. The incident was settled with the U.S. government, which exhibited great restraint, by apologies and indemnities.

Meanwhile (late Nov. 1937) Japanese peace terms, announced on Jan. 22, 1938, were proffered through a German intermediary: China to abandon pro-communist and anti-Japanese policies and collaborate politically and economically with Japan and "Manchoukuo"; demilitarized zones to be established "in the necessary localities" under "special regimes"; and China to pay indemnities. These

were rejected, and on Jan. 16, 1938, the Japanese government announced that it would no longer deal with Chiang Kai-shek.

Relations with the U.S. steadily deteriorated. Despite Japanese promises after the "Panay" sinking that U.S. rights would be respected in China, flagrant interference with U.S. and other interests increased, and the Japanese turned a deaf ear to protests from Washington and almost daily representations by U.S. Ambassador Joseph C. Grew and Chargé Eugene Dooman in Tokyo. The deterioration was punctuated by: (1) Japanese creation of a puppet regime at Nanking in March 1938; (2) opposition of the U.S. government to sale to Japan of aeroplane equipment and aviation gasoline; (3) stripping by Japanese sentries of foreign women at the barricades around the Tientsin British concession in the winter of 1938-39; (4) notification in July 1939 by the U.S. of forthcoming termination of the 1911 commercial treaty with Japan; (5) outbreak of war in Europe in Sept. 1939; (6) the expanding scope of Japan's avarice, apparent in 1940 from pressure on the Netherlands East Indies for economic concessions; (7) demands upon the French in Aug. 1940 for Japanese military occupation of certain places and, after Vichy French acquiescence, incursion of Japanese forces into northern Indo-China; (8) the conclusion on Sept. 27, 1940, of the tripartite pact by which Japan cast her fortunes with the axis and; (9) the deliberate bombing attack July 30, 1941, on the U.S.S. "Tutuila" at Chungking, which damaged the vessel and endangered U.S. Ambassador Clarence E. Gauss' office. A neutrality pact with soviet Russia was signed April 13, 1941, to the relief of the military, who had suffered a rude shock over Japanese casualties and soviet fighting ability in two major Manchurian-Siberian border incidents-in July-Aug. 1938 (Changkufeng) and in the summer of 1939 (Nomonhan).

Konoye was succeeded on Jan. 5, 1939, by Hiranuma, whose cabinet further tightened the wartime structure but was forced out in Aug. by the signing of the Germansoviet non-aggression pact. A new cabinet was formed under General Nobuyuki Abe on Aug. 28 which effected price controls and endeavoured to arrange for renewal of the U.S.-Japanese Treaty of Commerce to solve the "Tientsin incident" with Great Britain and to conclude a Japanese-soviet commercial treaty and fishery pact. The cabinet fell after 276 diet members called for its resignation because of its failure to cope with diplomatic developments. The next cabinet formed Jan. 16, 1940, by Admiral Mitsumasa Yonai was forced to resign in July because of Yonai's differences with War Minister Shunroku Hata, including his refusal to accept the tripartite pact. Konoye became prime minister for the second time on July 22. He dissolved the political parties on Aug. 22 and reorganized them into the Imperial Rule Assistance association, which became an authoritarian political control organ. Control was extended to include daily necessities, and in Sept. Japan concluded the tripartite pact with Germany and Italy.

After the outbreak of war between Germany and soviet Russia, Konoye reorganized the cabinet (July 18, 1941) with Tojo as war minister. On Sept. 6 it was decided at an imperial conference that conversations then going on with the U.S. should continue but that failure to make progress in a short time would require decision to prepare for war. Early in Oct. the cabinet considered (1) whether agreement with the U.S. on minimum Japanese demands no longer could be reached, and (2) whether in such case Japan should decide to prepare for war. Konoye is reported to have held that agreement with the

U.S. was still possible, provided an agreement for withdrawal of Japanese troops from China could be reached. Tojo argued that agreement with the U.S. was no longer possible, that Japan could not agree to withdraw troops from China, and that the time was ripe for Japan to make up its mind for war. The navy was far from confident of its strength but would not officially admit so, merely stating that it would support a decision by the prime minister. Tojo was thus able to force Konoye's resignation. When Tojo was selected to form a cabinet, the emperor expressed serious desire that he reconsider the question and continue the conversations with the U.S. at all costs. Tojo stated to the diet Nov. 17, that agreement with Vichy France for occupation of Indo-China was a "defense measure," and demanded that third powers not obstruct settlement of the "China incident," and that they retract economic measures against Japan. Final decision for war was taken by Japan's military rulers shortly thereafter.

U.S.-Japanese Negotiations, 1941.—The German failure to achieve quick victory and the stalemate in China gave pause to saner Japanese. Early in 1941, a suggestion was put forward through private Japanese and U.S. citizens that the Japanese government might welcome an opportunity to modify its attitude. Ambassador Kichisaburo Nomura presented to Secretary Cordell Hull a proposal for a "general settlement" based on concept of joint overlordship of Pacific areas and suggesting that the U.S. request China to negotiate with Japan, that normal trade be resumed, and that the U.S. facilitate procurement by Japan of natural resources in the Southwest Pacific. On June 21 the state department proposed, inter alia, a mutual declaration of peaceful intent; Japan was not committed to take action against the U.S. if the latter, in self-defense, should be drawn into the war in Europe. After discussion of Japanese terms, the U.S. would propose that China negotiate for peace, and nondiscriminatory access to supplies would be provided in the Pacific.

An imperial conference on July 2, 1941, was followed by the ordering up of 1,000,000 or 2,000,000 men, recalling merchant vessels in the Atlantic and full censorship. The press accentuated the familiar allegation of encirclement by the "ABCD" powers (United States, Great Britain, China and the Netherlands). On July 24 President F. D. Roosevelt proposed that he seek British, Dutch and Chinese agreement to neutralization of Indo-China. Japanese forces shortly moved into southern Indo-China and began infiltration into Siam. On July 26, Japanese assets in the U.S. were frozen. On Aug. 8 Nomura suggested that Konoye and Roosevelt meet. Following the president's return Aug. 17 from the Atlantic conference, Secretary Hull informed Nomura that further steps by Japan toward domination by force would impel the U.S. to take measures to safeguard its rights and ensure its security. On Aug. 28 the president received a definitive proposal from Konoye for a meeting. Roosevelt's reply (Sept. 3) pointed out that a prior meeting of minds on principles was necessary. Further informal U.S.-Japanese conversations ensued in Washington, largely with the state department.

On Oct. 16 Konoye was replaced by Tojo. Early in Nov. the plan for attack on Hawaii, the Philippines and British and Dutch possessions was approved, and the carrier task force for attacking Pearl Harbor moved to the southern Kuriles. The subsequent dispatch of Saburo Kurusu as a special emissary to "assist" Nomura in Washington was accordingly little more than subterfuge. When

Kurusu and Nomura had their first conference with Roosevelt and Hull on Nov. 17 no new proposals were presented. On Nov. 26, Hull handed Nomura an outline of a tentative broad agreement: mutual affirmations of policies of peace; inviolability of territorial and administrative integrity of all nations and equality of commercial opportunity; peaceful settlement of controversies; a multilateral nonaggression pact with the governments principally concerned in the Pacific area; support of the Chungking government and relinquishment of extraterritorial rights; reciprocal trade; removal of freezing restrictions; acknowledgment that no agreement concluded with any third power should conflict with these fundamental purposes. The U.S. also proposed withdrawal of foreign forces in China and Indo-China (the last of the U.S. forces were then being withdrawn from China and British forces had already been withdrawn).

Tojo described the "Nov. 26 note" as an "ultimatum," Japanese troop movements into Indo-China were intensified and the naval task force in the Kuriles received sailing orders for Hawaii (about Nov. 28).

To exhaust every effort for peace, Roosevelt on Dec. 6 telegraphed a personal message to Hirohito. (There was reason to believe that it was not delivered.) Carrier-based Japanese planes attacked Pearl Harbor at 1:20 P.M., Washington time, Dec. 7–45 minutes before Nomura and Kurusu called on Hull to inform him that "it is impossible to reach an agreement through further negotiations."

Japan's declaration of war on the U.S. and Great Britain, dated Dec. 8, 1941, was not communicated to Ambassador Joseph Grew until 11:00 A.M. Dec. 8, 7 hours and 40 minutes after the attack on Pearl Harbor. (For the subsequent military and naval developments in the Pacific and southeast Asia, see World War II.)

The War Years 1942-45 in Japan.-In Feb. 1942, the Imperial Rule Assistance association, organized in Oct. 1940, began to select candidates for the elections of April 30, which were marked by vigorous persecution of nonrecommended candidates. Three hundred eighty-one official and only 85 unofficial candidates won seats. The Imperial Rule Assistance Political society, meanwhile, had become an increasingly important part of I.R.A.A., and in June Tojo brought under its control industrial, agricultural and maritime organizations as well as youth and women's associations, and it became the co-ordinating centre of the patriotic movement. The information board was converted into a censorship, propaganda and thoughtcontrol machine backed by military police. In Sept. the Greater East Asia ministry was set up to administer the occupied areas.

The year 1943 was one of decisive battle and victory. but the public was becoming uneasy. Tojo reorganized his cabinet in the spring of 1943, bringing in three politicians and naming eight prominent men of finance and industry as advisers. As the war industries failed to reach expectation and discord between the army and navy grew more acute, Tojo made a desperate effort to co-ordinate command and administration and in Nov. set up the munitions ministry. He was then premier, foreign minister, minister of war and of education, chief of the general staff and munitions minister, with control over production of war supplies including aircraft. He also obtained authority over production and administration of ships, planes, coal, light metal, iron and food. Boys of 17 were placed on the draft list, and boys of 14 were trained for the air services. An emergency act closed most colleges and put high school boys and girls into war industries. But aircraft production could not keep up with the massing U.S. air strength; criticism mounted, causing Tojo to arrest hundreds of liberal thinkers and antimilitarists. (The postwar prime minister Shigeru Yoshida, was held over six weeks.)

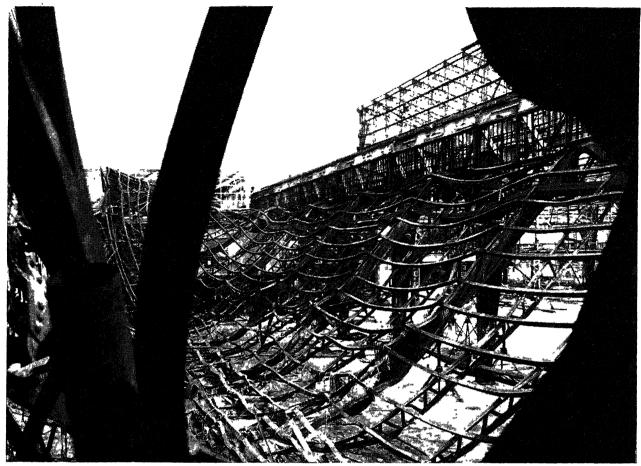
On Nov. 26, 1943, Roosevelt, Churchill and Chiang Kai-shek had issued the Cairo declaration that unrelenting pressure would be brought upon Japan by sea, land and air; that territory stolen from China would be restored; that Japan would be expelled from all territories which she had taken by violence and greed after World War I; and that Korea should become independent.

Saipan fell in July 1944. The elder statesmen as well as the public were then so alarmed that Tojo was finally forced to resign. His collapse was a turning point; victory was no longer a possibility and the war was coming close to Japan. It also marked the end of the dominance of the military. On July 22 General Kuniaki Koiso organized a cabinet which more nearly approached equilibrium among the dominant groups of the oligarchy. A council of supreme war leaders was initiated, but Koiso failed to bolster the war effort and on April 4, 1945, he resigned. (The secret Yalta agreement providing for soviet entry into the war with Japan "two or three months after Germany has surrendered" had been signed by Roosevelt, Churchill and Stalin Feb. 11.)

On April 9, Admiral Kantaro Suzuki, confidant of the emperor, formed an elder statesmen cabinet and prepared for termination of the war with hope for negotiated peace. With Okinawa as a base, B-29 attacks upon Japan developed in full force. Request for soviet good office in mediating peace was made in June. The Potsdam declaration calling for surrender was issued by the presidents of the U.S. and China and the British prime minister on July 26. The blasting of Hiroshima by an atomic bomb on Aug. 6 impelled the government to speed.

Developments Leading to Surrender.-The Suzuki cabinet, installed April 7, 1945, had as its paramount and secret task re-examination of the military situation. Reportedly Navy Minister Yonai and Suzuki, working in secrecy from the army, reached the conclusion that to continue the war would mean utter destruction of Japan. During the last ten days of June the emperor, presumably on the basis of their report which he had ordered, called an imperial conference and directed that steps be taken to end the war. Early in July it was decided to make an approach through the soviet government, which was requested to accept a special envoy from Japan. The U.S.S.R. rejoined with a request for information as to the purpose of the Japanese proposal. The Japanese government replied that the special envoy (Konoye) would be sent to discuss improvement of soviet-Japanese relations and employment of soviet good offices to bring about an end to the war. Despite urgent requests by the Japanese ambassador in Moscow, no definitive soviet reply was received before the soviet declaration of war on Japan.

Faced with the emperor's orders to bring the war to an end, the cabinet studied the Potsdam declaration of July 26, 1945, and concluded that it constituted an acceptable basis for surrender. However, almost insurmountable difficulties arose from the inability of the Japanese army to halt the momentum of war and to devise a formula for surrender; and a second imperial conference was called Aug. 9. For the first time, Japanese leaders, were unable to reach a decision at an imperial conference, and the emperor made the decision on his own responsibility. The emperor was reported to have stated that the Potsdam declaration



Mitsubishi aircraft plant in Nagoya, about 70% destroyed by B-29 incendiary raids in 1945. Larger than Willow Run, the plant assembled about a fifth of all Japanese warplanes

should be accepted; that from the very start of the war, military plans and information had been far from the facts of the situation; that continuing the war would mean destruction of the Japanese people and nation and would also be disastrous to civilization; and that termination of the war in this manner and at this time was in accordance with the "divine will" and the "destiny of the world."

The conference closed at 3 A.M. on Aug. 10, and at 7 A.M. a telegram conveying qualified acceptance of the Potsdam declaration was dispatched (without reference to the foreign office) through the Swiss government. The Allied reply, received on Aug. 13 at 5 A.M., according to Japanese sources, was hotly debated; it was necessary again to summon an imperial conference on Aug. 14 at 10:45 A.M. at which the emperor reportedly ordered the cabinet immediately to draft an imperial rescript terminating the war. The emperor broadcast the rescript directly to the people on Aug. 15.

There was fear that elements of the Japanese army would attempt a coup d'état, but owing to the efforts of officials favouring peace only minor disturbances occurred. During the night of Aug. 14–15, imperial guards mutinied, partly in an effort to find and destroy the record of the emperor's projected broadcast. Soldiers and officers appeared at entrances around the palace and prevented anyone from entering or leaving in an endeavour to forestall the broadcast. They were finally persuaded to depart peacefully. Others attacked the prime minister's residence with machine guns and burned it as well as the residence

of Hiranuma, who was reputed to have played an important role in the surrender developments.

The Suzuki cabinet, its mission completed, resigned the day of the imperial broadcast: War Minister Korekicho Anami committed suicide early that morning.

Surrender.-Japanese qualified acceptance of the Potsdam terms ("understanding that [it] does not comprise any demand which prejudices the prerogatives of His Majesty as a sovereign ruler") was received by Secretary of State James Byrnes on Aug. 10 through the Swiss chargé. On Aug. 11, Byrnes replied that "authority of the Emperor and the Japanese government to rule the State shall be subject to the Supreme Commander of the Allied Powers, who will take such steps as he deems proper to effectuate the surrender terms . . . Ultimate form of government of Japan shall . . . be established-by the freely expressed will of the Japanese people," and, "the armed forces of the Allied Powers will remain in Japan until the purposes set forth in the Potsdam Declaration are achieved." On Aug. 14 the Swiss chargé forwarded a statement from the Japanese government that the emperor had issued a rescript regarding Japanese acceptance of the Potsdam declaration.

The unconditional surrender of Japan was announced by President Truman on Aug. 14. General Douglas MacArthur, in Manila, assumed command as supreme commander for the Allied Powers (S.C.A.P.). On Aug. 17 the Japanese government notified MacArthur that the emperor had ordered hostilities to cease. Japanese emissaries reached Manila by air on Aug. 19 to receive requirements for surrender, and departed the next day. On Aug. 28 a U.S. advance party arrived by plane at Atsugi—the first

invasion of the Japanese home islands by foreign military forces in modern history. MacArthur and Gen. Robert L. Eichelberger, commander of the occupation forces, arrived by plane on Aug. 30. On Sept. 2 the surrender instrument was signed aboard the U.S.S. "Missouri" in Tokyo bay by Foreign Minister Mamoru Shigemitsu on behalf of the Japanese emperor and government and General Yoshijiro Umezu on behalf of imperial general head-quarters. MacArthur signed as supreme commander for the Allied Powers (S.C.A.P.), followed by representatives of the U.S. (Admiral Chester Nimitz), China, U.K., U.S.S.R., Australia, Canada, the provisional French government, Netherlands and New Zealand. U.S. troops continued to land. There was no resistance; no hostile shot was fired.

From Defeat Toward Democracy.-In surrender the Japanese experienced a profound psychological convulsion. The emperor ordered them to co-operate with the occupation authorities, and it was soon apparent that they did so willingly. Much of the friendliness which developed was due to the conduct of the U.S. troops. Japanese relief at the war's end was heightened by the discovery that they were not to be murdered, beaten, raped and pillaged. Resentment turned against past leaders and many Japanese looked upon the U.S. troops as liberators. This did not mean that former forces had been dissipated, that the oligarchy would not attempt to salvage itself or that political and social thinking had been wholly reformed. But there was no doubt that the people-war-weary, disillusioned, bewildered almost to apathy-had learned that the past had betrayed them and that their hope lay in a new kind of future.

The basic U.S. directives, followed within a year by adoption of a new constitution, set up framework for democratic life. Ultimate results were, of course, still to be defined. But the vigour of a press set free, widespread participation in the April 1946 elections by newly enfranchised men and women, resurgence of the labour movement, undreamed-of new life for the submerged peasant farmer, birth of freedom for teachers—all attested to opportunities of far-reaching significance. This new and groping Japan, emerging from the chrysalis of the old, merited examination in the light of Allied interests.

It fell to the U.S. to take leadership in sacrifice and effort to encompass Japan's defeat and carry on the first months of occupation. It fell to the U.S. to formulate and effect initial post-surrender policies. Before the surrender, the U.S. proposed establishment of a far eastern advisory commission, but it was not set up until after the war and was not reconstituted until Feb. 1946 into the Far Eastern commission (one representative of Australia, Canada, China, France, India, Netherlands, New Zealand, Philippines, United Kingdom, U.S.S.R. and U.S., with the latter chairman). The Allies subsequently gave general approval to U.S. policies. With inauguration in April of the Allied Council for Japan (pursuant to the Moscow communique, Dec. 27, 1945) the regime comprised: (1) the commission in Washington for formulation of policies; (2) the U.S. government for issuance of directives embodying Allied policy and interim directives; (3) the supreme commander (S.C.A.P.) as sole executive authority; and (4) the council (one member for the U.S.S.R., British commonwealth and China, and the supreme commander or his deputy, George Atcheson, Jr., as chairman and U.S. member) to consult with and advise MacArthur.

The basic policy was in part as follows: to ensure that Japan would not again be a menace to peace and security;

to bring about establishment of a government which would respect the rights of other states, support the ideals of the United Nations charter and conform to democratic principles ("it is not Allied responsibility to impose any form of government not supported by the freely expressed will of the people"); to limit Japan's territory to Honshu, Hokkaido, Kyushu, Shikoku and minor outlying islands; to demilitarize Japan completely and eliminate the influence of militarism; to encourage development of individual liberties and respect of human rights; and to permit an economy which would meet peacetime requirements of the population. It provided also for military occupation with participation of appropriate Allied forces under command of S.C.A.P. (designated by the U.S.); for subjection of the authority of the emperor and government to S.C.A.P. and exercise of his authority through Japanese governmental machinery to the extent that this furthered



Japanese repatriates, mainly war widows and children, in their quarters below deck on a small merchant ship carrying them from Shanghai to Japan in 1945

occupation objectives; and denial to Japan of an army, navy, air force, secret police or civil aviation. It stipulated further that important military and naval officials and exponents of militarism and aggression would be taken into custody. Democratic organizations would be encouraged and the economic basis of military strength would be destroyed. Wide distribution of income and ownership of production and trade would be favoured, monopolies dissolved and reparations made.

It was this broad pattern which General MacArthur, virtual ruler of Japan, administered in detail in the ensuing months with wisdom, understanding of the Japanese, tolerant leadership and high statesmanship.

Demobilization and Demilitarization.—The landing of two and one-half U.S. divisions (combined air and seaborne landings supported by sea and air patrols) into the armed camp of 57 divisions that was Japan in late Aug. and early Sept. 1945 was aptly described as the greatest military risk in history. There was no opposition. Demobilization proceeded rapidly through use of Japanese demobilization machinery; 2,576,085 Japanese troops within the home islands were demilitarized by December. The remainder, totalling 5,852,000, were spread from Manchuria to the Solomons and across the islands of the Central and Southwest Pacific, as were 1,300,000 navy personnel.

Of the remaining 3,147,000 army and 234,000 navy personnel in overseas areas, all were disarmed in southern Korea, the Philippines, Ryukyus, Volcanos, Siam, Malaya, Borneo, the Celebes and the Lesser Sundas, with some 18,000 remaining armed in Sumatra and Java. Most of the original 1,542,000 troops in China (exclusive of Manchuria) and the 165,000 in Formosa were disarmed. (The status of Japanese troops which fell into soviet hands, estimated at 800,000, remained unknown.) A program instituted by S.C.A.P. early in Sept. 1945 to repatriate 5,500,000 persons, including civilians, was practically completed by June 1946.

The first echelon of a British commonwealth occupation force arrived Feb. 1, 1946. There were no occupation troops assigned by the soviet government.

Trial of Major War Criminals.—On Nov. 17, 1945, the Japanese government was given its first directive to deliver to prison listed major suspects. On Jan. 19, 1946, MacArthur issued the charter for the International Military tribunal at Tokyo. The U.S., China, United Kingdom, U.S.S.R., Australia, Canada, France, the Netherlands, New Zealand, India and the Philippines nominated members.

The suspects indicted when the tribunal opened May 3, 1946, were: Baron Sadao Araki, Gen. Kenji Doihara, Col. Kingoro Hashimoto, Field Marshal Shunroku Hata, Baron Kiichiro Hiranuma, Koki Hirota, Naoki Hoshino, Gen. Seishiro Itagaki, Okinori Kaya, Marquis Koichi Kido, Lt. Gen. Hyotaro Kimura, Gen. Kuniaki Koiso, Gen. Iwane Matsui, Yosuke Matsuoka (who died during the trial), Gen. Jiro Minami, Lt. Gen. Akira Muto, Fleet Adm. Osami Nagano, Takasumi Oka, Shumei Okawa (who was declared insane), Lt. Gen. Hiroshi Oshima, Kenryo Sato, Mamoru Shigemitsu, Adm. Shigetaro Shimada, Toshio Shiratori, Teiichi Suzuki, Shigenori Togo, Hideki Tojo (who shot himself but recovered) and Yoshijiro Umetsu. General Tomoyuki Yamashita, Japanese commander at the time of the infamous "Bataan death march" and General Masaharu Homma were tried in Manila and executed; Field Marshal Count Juichi Terauchi died in British custody in southeast Asia.

Forty-nine more major suspects were ordered apprehended by Aug. 31, 1945, and some 825 minor suspects had been charged for trial by military commission. (See also WAR CRIMES.)

Postwar Political Parties.—After surrender, former political leaders became active in forming new parties and sought to give a democratic hue to the organizations which came into being in Nov. and Dec. 1945. The communist leaders, released after some 18 years in prison, were later joined by Sanzo Nosaka, who had spent several years in Moscow and later was with the Chinese communists in Yenan. Former proletarian and labour leaders formed the Social Democratic party whose complexion varied from extreme left to right. Remnants of the former leadership of the Seiyukai organized the conservative Liberal party. Former Minseito leaders organized the Conservative Conservative Minseito leaders organized the Conservative Liberal party.

ative Progressive party. A Co-operative party was founded by 27 diet members and heads of national co-operatives.

The Progressives, Liberals and Co-operatives advocated retention of the emperor (which appealed to at least 90% of the people); the Social Democrats held that too much power was vested in the emperor, while the Communists reverted to their demand for establishment of a "democratic republican government." Economically the Progressives stood for moderate government control; the Liberals maintained that excess population could be employed only by intense industrialization and a laissez-faire economy; the Social Democrats favoured nationalization of industries as opposed to the Co-operatives' plan for a co-operative community. The Communists advocated free distribution of land to working farmers and abolition of "monopolistic capitalism." Only the Progressive and Communist parties advocated full equality for women. All except the Communist party favoured government-proposed draft constitution.

After the election, the strength of the parties in the diet as of Aug. 31, 1946, was: Liberals 149, Progressives 105, Social Democrats 97, Co-operatives 43, Communists 6 and Independents 66.

Economic and Educational Programs.—While Japan's industrial potential had not been greatly reduced, defeat found the wartime economy broken. Industry, lacking workers and raw materials, was at a standstill. An unbalanced, unsound economy was left, cut off from the Asiatic mainland with which it had become integrated. The occupation began with serious shortages of food, housing and clothing.

Among the first steps taken by S.C.A.P. was the issuance of directives instituting foreign exchange controls, continuing price controls and rationing, and requiring removal of food from hoarded stocks into normal distribution. A government campaign to eliminate the black market was supported, and foodstuffs were imported from the U.S. Procedures were established to permit conversion of war plants. The U.S. Commercial company, agent for S.C.A.P., effected exports during the first year estimated at \$26,000,000 to pay for essential imports, primarily food. A Japanese economic stabilization board co-ordinated wage and price controls, allocated critical raw materials and stimulated business recovery. As a result of the Pauley Reparations mission, some 600 arsenals, aircraft plants and military laboratories were taken into custody and by Sept. 1946, 750 plants in 8 basic industries were selected for further implementation of the program. The holdings of the 14 major families of the Zaibatsu were frozen, and 1,189 firms linked in this system were restricted to S.C.A.P. approval of transfer of assets. The government created a liquidation commission to sell Zaibatsu securities. The Mitsui, Mitsubishi, Sumitomo and Yasuda combines submitted plans for dissolution and on Nov. 6, 1945, the government was directed to present a program for laws to eliminate monopolies.

The first draft legislation was inadequate, but study of a revision ensued. The control associations were also abolished.

At the end of the first year of occupation, inflation was continuing and shortages of raw materials persisted. While food prospects improved, the difficulty of restoring the nation's economic life remained the major problem facing the government.

When hostilities ceased, the educational system was at a virtual standstill. But within a year some 18,000,000 stu-



dents were attending 40,000 schools. Under a S.C.A.P. directive (Oct. 22, 1945), transformation into a democratic system began with elimination of militaristic and ultranationalistic personnel. Military training courses and state Shinto doctrine were removed; courses in geography, Japanese history and morals were suspended. Rewriting of objective textbooks was undertaken. Radio, press, motion pictures and other media were used, and operation of a free and democratic press was furthered. A U.S. educational mission visited Japan in March 1946, and in due course submitted comprehensive recommendations.

Political Progress of the First Year.—A cabinet under Prince Naruhiko Higashi-Kuni was formed Aug. 16, 1945. With the military backbone and driving power of government eliminated, it was an inept stopgap cabinet in the face of overwhelming problems of food and shelter and general rehabilitation of the economy. The emperor made his first call on Gen. MacArthur on Sept. 26. The cabinet collapsed a week later as a result of the S.C.A.P. civil liberties directive which required ordered release of political prisoners (which the cabinet had negatively considered) and insisted upon freedom of expression. Incidentally it required removal of Home Minister Yamazaki.

After four days, Kijuro Shidehara, one-time foreign minister in the Minseito cabinet (1924-29) and former ambassador to the U.S. who had long been politically inactive, formed a cabinet selected in part from the point of view of their unobjectionableness. In neither approving nor disapproving, MacArthur implemented his wise policy of nonintervention except in case of necessity. Uncertainties of the program of war crimes arrests hung ominously over the Shidehara cabinet and the diet; there were persistent vernacular press campaigns for governmental self-purging.

Communist demonstrators headed toward the Tokyo residence of Premier Shidehara on April 7, 1946, demanding the resignation of his cabinet. Two weeks later, the premier and his cabinet resigned

As result of Shidehara's first meeting with MacArthur Oct. 11, he undertook steps toward constitutional revision. On Nov. 26 the 89th extraordinary session of the dict convened to revise the election law and enact bills amending wartime financial and other controls and to permit organization of labour. The resulting election law provided for women's suffrage—first and most far-reaching step in women's emancipation from feudalism—and lowered the voting age from 25 to 20 and candidacy age from 30 to 25. An Agricultural Lands Adjustment law provided for transfer of land under a five-year plan from absentee landowners to tenant farmers (it was later greatly liberalized by revision undertaken at S.C.A.P. instance). A Trade Union law guaranteed right to organize and bargain collectively, but also required subsequent revision.

Meanwhile, more major war criminal suspects were ordered arrested, including Konoye, who took poison and died, and Kido. Divorce of Shinto from state support by S.C.A.P. directive of Dec. 15 was calmly accepted. A significant move in reorientation of feudalistic thought was a rescript issued in ordinary language Dec. 31, in which the emperor denied his reputed divinity and the theory of Japanese racial superiority. Later the emperor undertook tours which included visits to factories as part of a program to be in touch with the people.

Two S.C.A.P. directives were issued Jan. 4, 1946: for "removal and exclusion of undesirable personnel from public office" and for abolishment of nationalistic political organizations. There were profound effects; by Aug. the government had screened 5,520 office holders, 3,384 diet candidates, all elected members of the diet and members of and nominees to the house of peers; removed 814 rank-

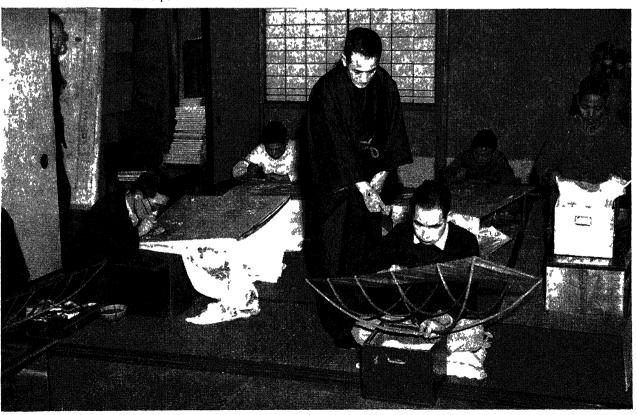
ing officials, 9 new diet members (plus Hatoyama, the Liberal party leader, removed by S.C.A.P. as he was about to be named premier), 6,202 under the "Civil Liberties directive" and 252 diet candidates; in all, excluded from office 186,000 persons. The directives also caused reorganization of the cabinet; made 90% of the diet ineligible for reelection, and brought about 30 new appointments among prefectural governors. The estimate of barred Progressive candidates was 200 of their 272 old diet members. The Liberals lost 12 former diet members.

The new draft constitution was published March 6, 1946, with approval by MacArthur, who expressed "deep satisfaction" with it, gave especial praise to the provision abolishing war as a sovereign right and stated that the Japanese now "turn their backs firmly upon the mysticism and unreality of the past and face instead a future of realism with a new faith and a new hope." The draft was a model of democratic thinking. By its terms, sovereignty rested with the people, the emperor was deprived of important political functions and became chiefly a symbol of the state; peerage and privy council were abolished; the diet became the highest state organ. The cabinet was made responsible to the diet. The lower house, controlling the budget, became the real power. A Bill of Rights as far-reaching as that of the U.S. was adopted. All leading political groups except the Communists expressed general approval of the draft. The house of representatives might be dissolved by the cabinet but in such event a general election must be held within a short time. A house of councillors, composed of elected representatives of the people, replaced the house of peers, had to be closed whenever the house of representatives was ordered dissolved and could not prevent legislation providing a bill was passed a second time by the house of

Japanese home industry in 1946. Hand painted silks finished in this shop were to be fashioned into kimonos, a profitable luxury article for export

representatives with a majority of two-thirds of members present. Qualifications of electors and members of the house of councillors were to be fixed by law without discrimination because of race, creed, sex, social status or family origin. In time of national emergency the house of councillors might be convoked by the cabinet in emergency session even when the house of representatives had been dissolved. Measures passed by the house of councillors at such sessions would become null and void unless agreement of the house of representatives was obtained within ten days after the opening of the next session of the diet. All meetings were to be public except when sessions meanera were voted by a majority of two-thirds or more of the members present.

General elections were held April 10, 1946, with the paramount question of the draft constitution. Almost 3,000 candidates competed, and nearly three-fourths of those qualified voted (26,000,000), including women. The elections demonstrated that the people were taking deep interest in the political revolution, and that their conservative tendencies continued to predominate. Criticism of the government increased. A demonstration of 30,000 organized by left wing Social Democrats and Communists gathered April 7 in a Tokyo park and rioted before the prime minister's residence. The Communists advocated a general strike. The cabinet finally resigned April 22 and a month of negotiation elapsed. The premiership was given to the new head of the plurality Liberal party, Shigeru Yoshida, former ambassador to London and foreign minister in the Shidehara cabinet. On May 20 he composed a cabinet chiefly of Liberals and Progressives which, although not well received by the press, was a step forward because of the democratic methods responsible for its formation and also because it undertook its heavy



tasks with initiative and a sense of responsibility.

Meanwhile, for the first time in a decade, May day was celebrated in the principal cities by approximately 1,000,-000 people. Other demonstrations followed and, consequent upon some acts of violence, MacArthur issued warning that while every possible rational freedom of the democratic method had been permitted, undisciplined violence would not be permitted. Discussion of communistic tactics arose in the public meetings of the Allied council. The chairman and U.S. member, Atcheson, stated for the benefit of the Japanese people that the U.S. did not favour communism in Japan. The draft constitution was the principal matter before the 90th session of the diet which opened June 20. It was approved by the lower house on Aug. 24 and passed by the upper chamber on Oct. 6, with amendments which were concurred in by the representatives the next day. Promulgation was set for Nov. 3, with the constitution to go into effect six months later.

The essential scaffolding for democratic political life was now erected. There was still much to be accomplished. While the Japanese people had progressed beyond all expectations, the road from defeat to democracy remained a long one over which, having been given assistance and guidance, they had in the final analysis to make their own way. As the government proceeded to act upon its own, fewer directives were issued pursuant to MacArthur's wise policy of encouraging the Japanese to seek the accomplishments of Allied goals which were becoming their own.

* * *

WHAT HAD the Japanese people lost? The gigantic military machine of the former Japanese empire whose cost bound the people to low standards of living had been completely destroyed. The tremendous military organization-approximately 4,000,000 organized and armed men in the home islands and 2,500,000 abroad-had been liquidated, and within another year the approximately 1,000,000 prisoners of war still in overseas areas would be added to the millions already returned to peaceful civilian pursuits. Thousands of military and civil aircraft, millions of weapons, vast quantities of ammunition-produced at an untold cost in treasure and toil-had been destroyed. The Japanese navy no longer existed; such of its ships that remained afloat at the time of the surrender were destroyed, scrapped or held for Allied division, and every element of Japanese industry utilized for, or capable of adjustment to the making of implements of war had either been destroyed or taken under complete Allied, control. The cost to the Japanese people of war-making was never compiled. In 1944-45, the budget figures for disbursements for the military alone amounted to 83% of the government's expenditures. That almost unbearable burden on their lives had been lost to the Japanese people.

Within the year after surrender, the Japanese people had come to comprehend the enormity of their betrayal by their leaders. With their feet set on paths of peace, they had lost the spirit of aggression, perhaps forever. The policies of Japanese leaders brought upon the Japanese people great economic destruction and left them faced with difficulty and suffering. Prosperity and comfort had been lost to them but not the prospect of a peacetime economic security whose benefits would be more widely distributed than before as they erected a new structure of peacetime livelihood.

What had the Japanese people gained through defeat and liberation? The masses were no longer regimented, the people no longer enslaved. The common man no longer cringed in the presence of police or other public authority. His home had become his castle, free from unwarranted intrusion, observation or violence. He worshipped as he chose. He registered his opinion on public issues, uncontrolled except by his own conscience. He enjoyed the right of assembly and petition. He enjoyed the right, individually or collectively with his fellow workers, to demand correction of unjust labour practices and conditions. His children, 18,000,000 of whom had returned to school, enjoyed the right to liberal and free education. Long and effective strides had been made in reshaping the Japanese government to conform to the principles inherent in a democratic state, so that the people might readjust their lives to compose a truly democratic society.

A new constitution, evolved from many months of widespread public interest and unrestricted debate, had been adopted. Designed effectively to curb abuse of power by individual, class or government, the new national charter placed sovereignty squarely in the hands of the people upon whom it bestowed full measure of human freedom. Electoral discrimination was removed, and the basic franchise was extended by the granting of suffrage to women and reducing the voting age limit from 25 years to 20. In the general elections of April 1946, a far greater number of those eligible to vote participated than in any other election in Japanese history. The women of Japan, breaking from their traditional retirement from the family circle, elected 39 women members of the house of representatives. Reform had been instituted in every element and echelon of the governmental structure and in every phase of governmental administrative procedure, to root out the evils of entrenched bureaucracy which had helped lead to totalitarian controls. Those who had preached the doctrine of militarism, expansionism and intense nationalism, and shaped the policies responsible for Japan's unholy and disastrous venture, were barred from governmental service to make way for a new leadership. The corporate and personal resources of the 14 major families, including the four big Zaibatsu groups with the approximately 1,200 firms linked in this system, were in process of liquidation with all principal officers and influential members of this industrial empire being ousted. Thus, the economic strangle hold upon the people in restriction of free enterprise, made possible by close alliance between government and concentrated wealth, was inexorably broken. Striking at the roots of feudalism, an agrarian reform program was begun to enable some 2,000,000 tenant farmers to purchase the lands they worked. Shaped to break down the large land holdings into two and one-half to ten-acre parcels, with their disposal provided for under conditions which would permit their ready acquisition, this program was designed to correct one of the notorious evils which had long plagued individual economy and held in serfdom the underprivileged agricultural workers

Few Japanese would not say that the gains immeasurably overweighed the losses.

At the surrender ceremony on the U.S.S. "Missouri" on Sept. 2, 1945, General MacArthur stated:

Nor is it for us here to meet, representing as we do a majority of the peoples of the Earth, in a spirit of distrust, malice or hatred. But rather it is for us, both victors and vanquished, to rise to that higher dignity which alone befits the sacred purposes we are about to serve, committing all of our peoples unreservedly to faithful compliance with the under-

takings they are here formally to assume. It is my earnest hope and indeed the hope of all mankind that from this solemn occasion a better world shall emerge out of the blood and carnage of the past—a world founded upon faith and understanding—a world dedicated to the dignity of man and the fulfillment of his most cherished wish—for freedom, tolerance and justice . . . As Supreme Commander for the Allied Powers I announce it my firm purpose, in the tradition of the countries I represent, to proceed in the discharge of my responsibilities with justice and tolerance, while taking all necessary dispositions to insure that the terms of surrender are fully, promptly and faithfully complied with.

This was the course charted, this was the course held to in conformity with the provisions of the Potsdam declaration and the basic post-surrender policy. In the latter document it was stipulated that an objective of the occupation was to bring about eventual establishment of a peaceful government which would respect the rights of other states and support the ideals and principles of the charter of the United Nations; and that while it was

Japan: Statistical Data, 1938 Amount or (000's omitted) İtem Number 1 ven = 28.45 centsExchange rate (is. 2d.) **Finance** Transportation 15,176 mi. Railroads 534,424 mi. 6,287 mi. Communication 981,930 229,387 mi. 3,584,000 Minerals 3,086,440 tons 740,000 oz. 112,435 tons 37,478,000 lb. 13,567,880 tons 2,278,344 " 1,736,343 " 1,512,356 " Livestock 1,894,000 1,140,000 282,000 Sea products 1,108,638 tons 7,615 " 71,098 " 59,111 " Forest products
Total 850,578,006 cu.ft. 2,138,279,419 cu.ft. Manufactures \$5,595,458 (£1,144,499) \$1,333,498 (£272,755) \$1,133,772 (£231,903) \$1,087,397 (£222,417) \$984,689 (£201,409) ... \$785,089 (£201,409)
\$765,240 (£156,523)
\$115,010 (£23,524)
\$103,597 (£21,190)
\$44,519 (£9,106)
\$32,935 (£6,737)
\$757,775 (£154,996)
\$124,284 (£25,421)
\$29,070 (£5,946)
\$26,845 (£5,495) Exports-total. 2,180,810,000 sq.yd. 32,000 tons Cotton cloth
Silk (raw)
Machinery and parts
Artificial silk tissues 337,122,000 sq.yd. 620,000 tons 918,000 " 58,000 " 4,124,000 " Coal Defense 850.000 t Standing army personnel Reserves
Standing navy personnel
Standing air force personnel 10,207† \$351,854† (£71,969) Military expenditures . . . Education 364,486 Universities . . 72,968

*In 1940, Revenues: \$1,053,214 $\{£277,602\}$; Expenditures: \$788,387 $\{£205,845\}$; no data on Gold reserves; National debt: \$5,005 $\{£1,568\}$. In 1940, Standing army personnel: 1,570,000; Army reserves: 685,000; Standing navy personnel: 107,000; Standing air force personnel: 51,500; Military expenditures: \$428,199 $\{£111,801\}$.

desired that such government should conform as closely as possible to principles of democratic self-government, it was not the responsibility of the Allied Powers to impose upon Japan any form of government not supported by the freely expressed will of the people.

By these terms the future lay squarely on the shoulders of the Japanese people. They had been given liberty and the framework for a new life, and it was for them in the last analysis to work out their own destiny. (See also ALIED CONTROL ORGANIZATION FOR JAPAN; FASCISM; UNITED STATES: WORLD WAR II.) (GE. A.)

Japanese Beetle

See ENTOMOLOGY.

Japanese-Chinese War

See WORLD WAR II.

Japanese Relocation, U.S.

See Aliens; War and Defense Agencies.

Jarvis Island

See PACIFIC ISLANDS, U.S.

Java

See Netherlands Colonial Empire; Netherlands Indies.

Javelin Throw

See TRACK AND FIELD SPORTS.

Jazz

See Music.

Jeffers, William M.

Jeffers (1876—), U.S. railroad executive, was born Jan. 2, 1876, in North Platte, Neb. He started with the Union Pacific railroad in 1890 as an office boy and worked his way up until he was president of the road in Oct. 1937. On Sept. 15, 1942, Donald Nelson, War Production board chairman, appointed Jeffers U.S. rubber administrator and gave him the task of executing the Baruch committee's proposals for tire conservation, gasoline rationing and expansion of synthetic rubber production. Jeffers carried out this difficult program in spite of innumerable disputes with the army, navy and government agencies. He resigned in Sept. 1944 to return to his position with the Union Pacific. On March 22, 1946, Jeffers announced his retirement as president of the railroad.

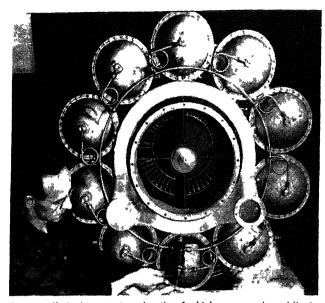
Jet Propulsion

After World War I the aeroplane power plant had been for years not only steadily improving in performance but also growing in complexity. The increase in power called for by the demand for larger and faster aircraft had been met by adding more cylinders and raising the boost pressure by the use of a supercharger. The flexible use of this power had been improved by the development of automatic power and fuel controls, but it was growing increasingly clear that these processes could not continue indefinitely and that a fresh start on new lines would have to be made. Aeronautical engineers had been interested for many years in the possibilities of propelling aircraft by means of reaction jets but the absence of a power plant suitable for producing the jet had prevented the practical realization of these ideas. Another difficulty had been the

low efficiency that would have resulted from the use in a low-speed aircraft of the comparatively high-speed jets necessary for propulsion. The internal combustion or gas turbine was another old idea which had remained little more than an engineers' dream for many hundreds of years. The difficulty with this engine had been partly the absence of materials suitable for continuous operation at high temperatures and partly the lack of an efficient means of compressing the air. But slowly, almost imperceptibly, progress was being made by increases in knowledge in various branches of engineering. The development of hightemperature alloys for the exhaust valves of internal combustion engines, the improvement in superchargers for aeroplane engines and the increase in the understanding of aerodynamics were all essential foundation stones on which future structures were to be built.

In several countries opinion began to harden round the practicability of the gas turbine and the first halting steps to achieve it were taken. But it was not until 1930 that Frank Whittle, then a cadet at the royal air force college, Cranwell, England, recognized that the very high air consumption of the gas turbine made it a particularly suitable power plant for producing a reaction jet, and he conceived the idea of the jet propulsion gas turbine. The Power Jets company was formed to exploit Whittle's ideas. Ideas of a similar kind had also been developing in Germany and work had started in 1936 at the Heinkel factory on the design of a jet propulsion gas turbine.

At the beginning of 1937 the first jet propulsion gas turbine engine was completed. This engine, known as type U, was manufactured by the British Thomson Houston Co., Rugby, England, for Power Jets Ltd., to the designs of Frank Whittle. The engine consisted of a double-sided centrifugal compressor driven by a single-stage turbine. The air from the compressor passed to a single combustion chamber in the form of a curved pipe wrapped round the outside of the turbine casing. The hot gases from this chamber were led to a volute connected to the turbine entry. The exhaust from the turbine passed out axially in a high-speed jet. The engine ran under its own power for the first time on April 12, 1937, and during the summer of that year testing continued intermittently. The principal difficulty encountered was that of obtaining satisfactory combustion; after numerous modifications had been tried it was decided to make a major change in the combustion chamber layout. The new arrangement, though showing advantages over the old, was still not good enough and, when testing was held up by a turbine blade failure, the opportunity was taken in 1938 to make a second change in the combustion layout. The new system, incorporating ten reverse-flow combustion chambers spaced symmetrically round the outside of the turbine casing, constituted the basic layout used in all the later Power Jets engines. Although progress was still hampered by combustion troubles which prevented the engine from achieving its designed figures, its performance was sufficiently good to justify greater resources being expended on solving the problems of jet propulsion. Accordingly the air ministry, in the summer of 1939, placed a contract with the Gloster Aircraft Co. for an experimental jet propulsion aircraft to the specification E28/39 and ordered from Power Jets an engine, known as the W.1, to power it. The W.1 was an improved version of the final form of the U-type engine. It passed a 25-hr. special category test at a thrust of 850 lb. in April 1941 and flew for the first time in the E28/39 aircraft on May 14, 1941. The company followed up this suc-



Jet-propelled plane engine, details of which were made public in 1945 by the U.S.A.A.F. This is a rear view, with the exhaust assembly removed to show the turbine, the one moving part. Air is compressed, forced into the combustion chambers which ring the engine, mixed with kerosene, and burned at more than 1,500° F. The hot gases pass through the turbine wheel, thus driving the compressor, and out through the jet exhaust

cess with a series of engines of improved performance but to the same basic design. Of these the W.2B designed in 1940 represented the prototype of the Welland engine, which was subsequently used in Meteor 1 aircraft. The series culminated in 1945 with the W/700 which developed about 2,200 lb. thrust.

While the W.1 and W.2 engines were still under construction and before any running experience had been obtained, apart from that on the original U-type engine, the air ministry took the farsighted decision to plan for production. To this end the drawings of the W.2 engine were handed over to the Rover company in 1940. The W.2 engine in its original form proved unsatisfactory and the Rover Co., whose original function had been production alone, soon found itself engaged in development. In this capacity it produced the W.2B.26 engine which differed from the earlier Whittle layouts in having straight-through instead of reversed-flow combustion chambers. This engine ran early in 1942 and served as the prototype for later engines produced by Rolls-Royce.

Early in 1943 the Rover company's responsibilities for gas turbine work were taken over by Rolls-Royce, who completed the production of the W.2B engine for the Meteor aircraft. This, the first production gas turbine engine, was known as the Welland and developed a static thrust of 1,600 lb. with a specific weight of 0.53 lb. per pound of thrust and a specific fuel consumption of 1.12 lb.hr. per pound of thrust. The next Rolls-Royce engine was based on the straight-through W.2B.26 engine of Rover's and was known as the Derwent I. This engine, which developed 2,200 lb. thrust with a specific weight of 0.43 and a specific consumption of 1.15, was fitted in the Meteor III aircraft. It underwent considerable development during the following years and in 1945 as the Derwent V it developed 3,500 lb. thrust with a specific weight of 0.28 and a specific consumption of 1.00 in the Meteor IV aircraft. While this development was proceeding Rolls-Royce produced a larger engine known as the Nene, but to the same general formula as the Derwent. This engine developed a 4,500 lb.

thrust with a specific weight of 0.29 and a specific consumption of 1.06. This rapid development of a range of very high performance engines by Rolls-Royce during the years 1943-45 represented a remarkable advance in the detail design of jet propulsion engines.

In 1941 Maj. Frank Halford, later of the De Havilland Engine Co., was asked by the ministry of aircrast production to work on a jet propulsion engine. It was designed in the light of experience already gained at Power Jets and elsewhere. This engine, known first as the H.1 and later as the Goblin, had a single-sided centrifugal compressor, straight-through combustion chamber and single-stage turbine. The engine first ran in 1942 and flew in 1943 in an Fg/40 aircrast. The engine started its lise with a rating of 2 000 lb. static thrust, but this was increased by progressive development to more than 3 000 lb.

The Axial Engine.-While Whittle's ideas were developing at Power Jets and were inspiring the design of centrifugal type engines at Rolls-Royce and De Havilland, a parallel development had been started by workers at the Royal Aircrast establishment. They had come to the conclusion that for the aircrast gas turbine the axial type of compressor, because of its higher efficiency and lower frontal area, was more suitable than the centrifugal type. A number of machines based on their designs and all incorporating axial compressors were constructed. The earlier designs were for engines to drive propellors, but at the outbreak of World War II in 1939 the necessity for getting quick results forced a decision to change over to the simpler form of jet propulsion engine. The construction and subsequent development of the first English axial jet propulsion engine was entrusted to the Metropolitan-Vickers Electrical Co., Ltd. The design of this engine, which was known as the F/2, was started at the Royal Aircraft establishment in 1939; the first engine ran in 1941

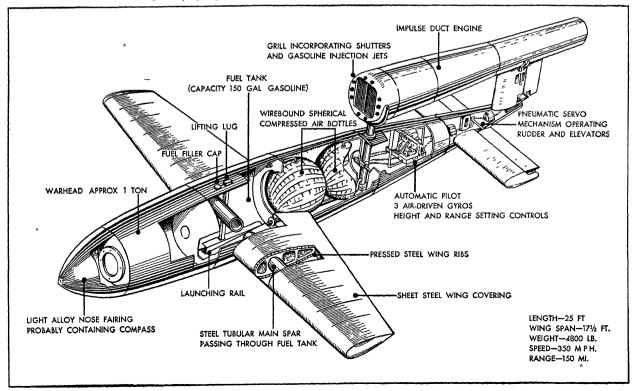
V-1, the German flying bomb, in a provisional sectional drawing. More than 9,000 of the pilotless, jet-propelled planes crossed the coasts of Great Britain during 1944 and 1945, causing about 6,000 deaths as well as widespread property destruction

and flew in the F9/40 aircraft in 1943. The engine consisted of a nine-stage axial compressor driven by a two-stage turbine with an annular combustion chamber. The original rating of the engine was 1,800 lb. static thrust, but by 1946 the Series 4 design developed more than 3,500 lb. thrust with only small increases in engine size and weight.

Research in the United States.—In the U.S. it was considered undesirable to distract the aeroengine firms from their work on piston engines, and the initial work of developing the jet propulsion gas turbine was placed in the hands of the General Electric company and the Westinghouse Electric company.

In Oct. 1941 a team of Power Jets engineers was sent from England to the United States, taking with it the Whittle W.1 engine and drawings of the W.2B engine. With the information thus provided General Electric first constructed an engine known as the I.A. based on the deeign of the W.I.X. At the same time a contract was placed with the Bell Aircraft company for an aircraft in which to fly the engines. The engine had its first run in March 1942 and gave a performance similar to that of its British prototype. The first flight of the aircraft, known as the Bell P.59, with its two I.A. engines took place in Oct. 1942. The G.E.C. followed up the type I.A. with a number of engines of greater power and improved design. These engines were generally of the same basic formula, but, as in England, a change was made from the contra-flow to the straightthrough type of combustion chamber. Among them were the I.16, which first ran in April 1943 and developed 1,600 lb. thrust, and the I.40, which first ran in Jan. 1944 and developed about 4,000 lb. thrust.

Concurrently with the development of the centrifugal engine, work had been proceeding, but on lower priority, on the axial-flow type of engine. The Westinghouse company began its development with a small engine of 19-in. diameter, known first as the 19.A engine and later as the





The Viper, a German jet interceptor launched by rockets from a modified gun mount and capable of soaring 30,000 ft. in less than a minute

Yankee. This engine ran for the first time in 1943 and developed 1,360 lb. thrust with a specific fuel consumption of 1.35 lb.hr. per pound of thrust and a specific weight of 0.61. It had a six-stage axial compressor, an annular combustion chamber and a single-stage turbine. The 19.A was later developed in performance and other engines of larger and of smaller capacity were developed along similar lines. The General Electric Co. also entered the axial field. At first it confined its attention to an axial engine for propeller drive, but in 1943 it embarked on an axial jet propulsion engine. This engine was known as the T.G.180 and carried out its first test run in 1944. The T.G.180 had an axial compressor of 11 stages, with pipe type straight-through combustion chambers and a single-· stage turbine. It developed a thrust of about 4,000 lb. with a specific weight of 0.57.

The end of World War II found the development of jet propulsion in the U.S. severely handicapped by the shortage of engine firms with gas turbine experience. In 1946 the outlook and plans of the aircraft industry had not been sufficiently defined for clear trends of development to be detected.

German Research.-The pioneering work on jet propulsion in Germany started at the Heinkel factory in 1936. The basic design of engine, from which a long chain of development later proceeded, consisted of a compressor having an axial stage followed by a centrifugal impeller, an inward-flow turbine and a contra-flow combustion chamber. Part of the air leaving the diffuser of the compressor by-passed the combustion chamber and rejoined the main stream just before admission to the turbine. The first engine of this design was known as the He.S.1. This was followed during the succeeding years by types He.S.2 and 3. In 1939 the He.S.3b had reached a sufficiently promising stage to warrant flight tests. The first flight was made in the Heinkel 178 experimental aircraft on Aug. 27, 1939. The engine developed a static thrust of 800 lb. for a specific weight of 1.00.

The promise of those early days was, for reasons probably connected with difficulties between the firm and the air ministry, not followed up. Heinkel acquired the control of Hirth-Motoren and during the next six years carried out at its factory a program of work which, although of interest to the development engineer, failed to produce effective aircraft engines. This development, which included a ducted fan engine, an engine with intermittent combustion and a ducted fan-piston engine combination,

culminated in 1945 with the He.S.11. In this engine the compressor consisted of an axial stage, followed by a centrifugal stage and three axial stages. The combustion system was straight through with downstream fuel injection. The turbine had two stages with hollow blades. The static thrust of the He.S.11 was 2,900 lb. for a specific weight of 0.72 and a specific fuel consumption of 1.30. At the end of World War II the engine had nearly reached the flight development stage.

As a contrast to Heinkel, which although first in the field yet failed to keep its lead by dissipating its development resources over too many projects, the Junkers company provided an example of a relatively rapid and concentrated development. After several years of tentative groping for the right starting point it was decided in 1989, probably after the Heinkel flight had shown the way, to start work on an axial jet propulsion engine. This engine, known as the Jumo oo4 A, had all the basic features of the later production engine. The eight-stage axial compressor was driven by a single-stage turbine and the combustion system was of the straight-through type with six chambers in parallel. Manufacture started early in 1940 and the engine ran for the first time toward the end of the year. The engine developed 1,800 lb. thrust with a specific weight of about 0.95 and a specific consumption of 1.5. The first flight was made in 1941, using an Me.110 as a flying test bed. A refined design, known as the Jumo 004 B. followed in 1942 and was flight-tested in the Me.262 in 1943. This engine developed 2,000 lb. thrust for a specific weight of 0.80 and a specific consumption of 1.4. The flight tests were satisfactory and plans for large'scale production were made. By the end of World War II about 5,000 engines had been completed. The Bayerische Motorwerke (B.M.W.) company started on jet propulsion engines in 1939 and produced the 003 engine. This was of the axial type with a seven-stage compressor, a single-stage turbine and an annular combustion chamber. The engine was generally considered to represent an improvement on the Jumo 004, but its development was not completed by the time the war came to an end.

Although the German jet propulsion engines were considerably inferior to contemporary British engines both in design and performance, it was to the credit of German engineers that they were the first to propel an aircraft by jet propulsion and the first to achieve large-scale production of jet propulsion engines and aircraft.

Thrust Boosting.—As the jet propulsion engine was in the first place developed primarily for fighter aircraft it was natural that the major emphasis should be placed on obtaining the greatest possible thrust for a given weight or size of engine. Considerable effort was therefore expended

Republic XP-84 Thunderjet which set an official U.S. speed record of 611 m.p.h. (unofficial 619 m.p.h.) during a test run in Sept. 1946. It was the first U.S. army jet fighter in that speed range



Jewels

See GEMS AND PRECIOUS STONES; MINERALOGY.

Jewish Religious Life

in increasing the thrust by the refinement of detail design. In addition to this normal process of development special forms of thrust boosting were developed. The most important of these was the burning of additional fuel in the exhaust pipe after the turbine. This process, known as reheating, resulted in an increase in jet velocity and therefore in thrust but had to be paid for by a considerable increase in specific fuel consumption. The first experiments carried out in England in 1944 gave increases in thrust of 25%. The technique was later developed on the ground and in flight both in England and in the U.S. and increases of thrust of more than 30% were obtained. As the specific fuel consumption was about doubled when using reheat, this method of thrust boosting was suitable only

for short periods such as take-off and combat.

A considerable increase in thrust, particularly at low flight speeds, could be obtained by the use of a ducted fan. The ducted fan consisted essentially of a propeller of high solidity, enclosed within the duct formed by the engine cowling and driven by the main engine. There were numerous possible layouts for a ducted fan and several of these were tried without much success. The first attempt was probably that of Campini in Italy who drove his fan by a piston engine. A similar attempt was made in 1942 by the National Advisory Committee for Aeronautics in the U.S. and by Heinkel in Germany. In England Metropolitan-Vickers added a ducted fan to its F.2 engine in 1943 and Power Jets added one to its W/700 engine in 1946. Although the ducted fan gave improved thrust and economy at low speeds and, when fuel was burnt after the fan, an increase in thrust at the expense of economy at high speeds, its development was not carried out with enthusiasm because of the severe installation difficulties.

Outlook.—By the end of 1946 sufficient experience in the new means of jet propulsion had been obtained to justify firmer estimates as to its scope and limitations.

It was clear that the jet propulsion gas turbine engine represented a big advance over the piston engine in simplicity and lightness and had in addition many operating advantages; and, unlike the piston engine, there was no practical limit to the size in which it could be produced. On the other hand, it suffered from the serious disadvantage that its specific fuel consumption was excessive at low aircraft speed. It was essentially a power plant for high-speed aircraft. It was also realized that if long range were to be obtained, the aircraft must fly at a high level where both the economic cruising speed of the aircraft and the thermal efficiency of the engine were greatest. The jet propulsion engine was thus considered to be suitable for aircraft flying at more than 450 m.p.h. at altitudes of more than 30,000 ft. with low and intermediate ranges. It was also suitable for short-range high-speed interceptor fighters at all altitudes. While the operating advantages of simplicity, light weight, quietness and freedom from vibration were admitted, it was generally felt that its more general application had to wait several years before the development of cleaner aircraft made possible economic operation at high speeds. (For types of jet-propelled planes, see AVIATION, MILITARY; see also ROCKETS.) (H. CT.)

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In the period 1937-46, the main influences affecting Jewish religious life were at first the dire propaganda and eventually the ruthless policy of extermination emanating from nazi Germany. In the German "master race" policy of annihilating Jews, Judaism early came under the ban. At the beginning of this decennium, before the nazis dared exercise unlimited conscienceless power, the attack on Jewish religious life in Germany took such forms as violating Jewish cemeteries, arresting rabbis, prohibiting the importation of kosher meat and liquidating smaller Jewish communities. But in a crescendo of diabolic horror, it rapidly moved on to the suppression of the Jewish press and publications, seizure of Jewish libraries, suppression of Talmudic academies, dynamiting synagogues, expropriation of Jewish religious institutions, confiscation of religious property, the arrest, torture, expulsion or murder of rabbis and religious teachers, dissolution of all Jewish communities and communal committees and organizations and in the end the annihilation of German Jewry through extermination in gas chambers.

This total warfare was waged also through a vast network of obscene anti-Semitic propaganda which was also exported far and wide beyond the borders of Germany. As Hitler's troops marched into the neighbouring countries of Austria, Czechoslovakia, Poland and the other lands of continental Europe, the German occupation authorities relentlessly put into effect the policies of extermination of Jews and Judaism which they had so efficiently worked out in Germany. Sometimes, as in Poland, they found the soil well prepared and saturated with native anti-Semitism. There no limits were set to their inhumanities, with the result that the 3,500,000 Jews of Poland of 1937 were reduced to some 80,000 at the end of the decade. Most of these were survivors of concentration camps, rescued only because the German authorities in the last days of losing World War II did not have time to "liquidate" all the Jews remaining in their hands. The virtual extinction of Jewry in Poland meant the obliteration of the most intensive centre of Talmudic religious study and living, for in prewar Poland were found the world's greatest Talmudic academies (Yeshivoth). With rare exceptions of individual rabbis and students who were able to escape through Siberia and the far east, the Polish Yeshivah scholars of Jewish religious tradition had been done to death and their seminaries destroyed beyond all hope of reconstruction in eastern Europe.

In lands such as the Netherlands, Italy or France, where German anti-Semitism met resistance on the part of the general population, the pace of obliteration of Judaism was slowed down in the hope of not intensifying the antagonism of the peoples of these occupied lands. In such countries, not all synagogues were automatically destroyed; but as the years rolled on, the Germans seized more and more of the Jewish population and sent them to destruction in murder camps.

From this general picture of destruction of Jewish religious life in continental Europe, only the Iberian peninsula in the west, Sweden in the north, Switzerland in the centre and Russia in the east, stood out. In Franco's Spain restrictions were placed on Jewish religious life. In the small communities of Portugal, Sweden and Switzerland, Jewish life developed to some extent through the influx

of refugees. In Russia a marked changed was recorded. At the beginning of the decade, all Russia was still in the grip of a government-sponsored militant anti-God propaganda and policy. Russian Jews were prohibited from giving their children Hebrew instruction and all religious education was barred. Synagogue buildings were transformed into communist clubs, and such Jewish religious life as persisted had gone underground. But early in the 1940s this policy began to be relaxed. The ban on public worship was mitigated, and synagogue services were tacitly or even explicitly allowed. However, the younger Jews who had grown up during a generation of militant atheism were largely lost to Jewish religious life, and among the 3,000,000 or more Jews of the soviet union Judaism survived pallidly and anaemically, without prestige in the older generation of grandparents.

Among the Jews who survived the cataclysm of continental Europe, Judaism was very sorely beset. While all Europe was grubbing among the ruins of its prewar economy, its Jews were sunk in the most abject poverty. Their communal property had been largely destroyed, and the personal property seized from them had rarely been restored. Thus, of the 180,000 Jews remaining in Hungary, no less than 120,000 were on relief. In such conditions the reconstruction of Jewish religious life became superlatively difficult. No religious teachers, cantors or rabbis were trained during the years of war, and there was an overwhelming lack of these functionaries, as well as of prayer books, Hebrew Bibles, religious text books and Hebrew books generally. Therefore, even though small Jewish communities should eventually be able to reconstitute themselves in what were some of the great centres of Jewish religious life in continental Europe, the immediate outlook for a strong and fruitful Judaism was dark

A further complicating factor was presented by the emotional outlook of the survivors. In many cases their years lived under fear of impending destruction, their despair of human goodness and the extreme of suffering endured had left them with the feeling that their prayers and their God failed them. These men had lost all faith in a religious concept of life. Others had accepted baptism in an attempt to escape from a religion that had drawn on them intolerable persecution. In other cases the dislocation of Jewish life through the destruction of synagogues, the murder of rabbis and the dissolution of Jewish communities

Anti-Jewish sign painted by quislings on a Norwegian shop window during the German occupation: "Palestine calling. Jews not tolerated in Norway"



had habituated the surviving Jews to a life without the forms and rituals of Judaism. In still other cases, in escape from the atrocities of the world, the swing had been to an extreme intensity of Jewish living. In very many cases, especially among the hapless displaced persons, the blood-soaked streets of their former homes in Europe and the meaningless cruelty of the unending camps for displaced persons made them utterly despair of Europe and seek a new field for Jewish life in Palestine. In a word, it was difficult to find in postwar continental Europe the simple, natural, balanced and happy Jewish religious life which marked so much of European Jewry in pre-nazi days.

During the decade, hundreds of thousands of Jewish refugees cluttered the highways and secret coverts of the whole world. Government action, beginning with the intergovernmental conference at Evian les Bains, successively postponed real action. Many of the refugees brought a certain increase of vigour to the religious life not only of the neutral countries of Europe, but also throughout Latin America and other countries which escaped occupation by the axis powers. New Jewish communities of this character grew up in such remote places as Salisbury, Rhodesia, or Tanganyika.

Outside of Europe, Judaism did not find a favourable attitude for development in Perón's Argentine republic and other lands into which the virus of anti-Semitic propaganda had been sedulously pumped by the nazis. Even in the U.S., forces of extreme reaction and illiberalism were sometimes financed and given leadership from German sources. Here and there swastika signs were daubed on synagogues, and, closely following the German model. tombstones were overthrown in Jewish cemeteries. But against such irresponsible hoodlumism, the voice of the U.S. spoke out strongly and clearly, with only feeble discordant overtones from the press of professional anti-Semites. Such threats to Jewish religious life were more than counterbalanced by the growth of interfaith goodwill. Enlightened religious leaders, recognizing that the virulence of German anti-Semitism was threatening to become pandemic, saw the necessity of strengthening organized religious interdenominational goodwill, and over the radio, in the press and through public meetings and striking joint pronouncements by Catholic, Protestant and Jewish religious spokesmen, the common basis of Judaism and Christianity and positive co-operation between Christian and Jew were held up as the true expression of the free democratic spirit.

The armies of the United Nations also served as a laboratory for distilling good interfaith relationships. In all these armies, Jews necessarily were present as a small minority. It was impossible to appoint enough Jewish chaplains to serve the Jews found in thousands of posts and on innumerable transports and warships throughout the world. The 311 Jewish chaplains in the U.S. army, navy and air force were able to care for the religious needs of the larger concentrations of U.S. Jewish uniformed men. But all over the world scattered Jews in the battle lines found their distinctive religious services organized, supervised and sometimes actually conducted by Christian chaplains. Gentile and Jew served, laboured, faced danger and gave their lives together in a flaming experience of intimate comradeship that revealed the oneness of their humanity and of their fundamental faith. Foxhole religion knew no denominationalism. But how much of this greater sensitivity to religion aroused by the experiences of war would be carried over into civilian life was not yet clear at the decade's end.

In two countries of the world Judaism grew strikingly in importance and vigour during this period-the United



Open air services for a Jewish congregation in the bombed ruins of the Aldgate synagogue in London during 1941

States of America and Palestine. Something of the religious fervour and Jewish scholarship of continental Europe found a new home in the U.S. through the forced emigres who found refuge there. By 1946, the world's greatest Jewish libraries and institutions of Jewish learning were to be found in the U.S. U.S. Judaism in 1946 was stronger than it was in 1937, both absolutely and also relatively in the light of the ruin or complete destruction of the great centres of Judaism on continental Europe.

In Palestine the strength of Judaism grew in this period by leaps and bounds. Notwithstanding Great Britain's policies, Jewish immigration swept on into the Holy Land openly and under cover, bringing new strength to the Hebrew university, to the Palestine rabbinate, to the Talmudic academies and the other Palestinian institutions of Jewish religious life and culture. During this period Palestine produced a notable outpouring of Hebrew literature. At the same time the ten-volume Universal Jewish Encyclopedia was completed in the U.S.

To sum up, the decennium brought destruction to Jewish life in most of Europe and the scattering of its surviving Jews to the four winds. Jewish religious life survived with vigour mainly in the U.S., the British empire and Palestine. (See also Anti-Semitism.)

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Jewish Welfare Board, National

Expansion of services to the U.S. armed forces and to the Jewish community centres of the United States, accompanied by far-reaching organizational, fiscal and programmatic changes, characterized the work of the National Jewish Welfare board (J.W.B.) in the decade 1937–46.¹ The decade saw Jewish centre membership rise to 427,000. Simultaneously, the number of national Jewish organizations affiliated with J.W.B. increased to 38 and J.W.B. sections, composed of regional groupings of centres, grew in number to 9. All these gains were accompanied by a rise in volunteer workers to 40,000.

In an era of global struggle, economic and social dislocation and postwar readjustment for millions of veterans and youth, J.W.B. launched new religious, cultural, social and educational services. These included a vast expansion of service to the armed forces; personnel training for centre professional workers through institutes and seminars; stimulation of local and regional youth councils; vocational guidance and veterans' aid programs; work with women and girls (through the U.S.O. and Jewish Center Committee on Women and Girls); published program aids; and recreational and cultural programs for rural communities.

World War II and the ensuing expansion of services and programs on a world-wide basis were accompanied by fundamental changes in the fiscal and organizational structure of J.W.B. Participation in J.W.B. was broadened by enlarging the national council to 517 members representing the local centres as well as national affiliates and regional sections; a national board of directors replaced the smaller executive committee, and gave direct representation to the J.W.B. constituent organizations; and a national finance council, composed of representatives of 35 different communities with a national plan for meeting the budget on a basis of quotas assigned to 700 local communities, was established. A major change in national leadership occurred when Judge Irving Lehman, president for 19 years, was succeeded by Frank L. Weil in 1940, while Harry L. Glucksman, executive director from 1919 until his death in 1938, was succeeded by Louis Kraft.

As U.S. Jewry's united instrumentality for serving the religious and welfare needs of Jews in the armed forces, J.W.B. had been ministering to their needs with government authorization since 1917. Between the two world wars, J.W.B. continued to serve at all military installations, and in World War II it expanded its machinery for caring for the spiritual needs of 600,000 Jewish men and women in the service.

At the core of the structure of service were the Jewish chaplains. These rabbis, whose congregants were G.I.s in battle dress, were recruited from civilian life by J.W.B.'s Committee on Army and Navy Religious Activities (C.A.N.R.A.), on which were represented rabbis from the reform, orthodox and conservative sections of the rabbinate in equal numbers. By Jan. 1, 1941, the committee had granted ecclesiastical endorsement to 15 chaplains. In the course of the war, 311 were endorsed, and on V-J day 288 were in service.

¹ The J.W.B. was authorized by the U.S. government to serve the religious, spiritual and morale needs of Jewish men and women in the armed forces, besides being the national association of Y.M.H.A.s, Y.W.H.A.s and kindred organizations representing 288 Jewish community centres and Y.M. and Y.W.H.A.s in the United States and Canada.

Chaplains were on duty wherever U.S. troops served. Jewish chaplains were aided in their work in Germany, France and China by a staff of J.W.B. workers stationed in Heidelberg, Paris, Reims, Frankfurt, Bremen and Shanghai, who established religious hospitality centres for Jewish men following V-J day.

Religious supplies from J.W.B.'s network of regional depots reached every corner of the globe. Regional supply depots in the United Kingdom, the European and Mediterranean theatres, India and Hawaii facilitated their dispatch. From 1941 to early 1942, J.W.B. distributed 135,000 army and navy prayer books and Bibles. In 1944, it distributed 193,700 prayer books and 1,257,643 Jewish calendars, in addition to 50,000 haggadahs and more than 550,000 mezuzzahs. All told, J.W.B. published and distributed more than 6,000,000 books and pamphlets for Jewish men besides supplying 600,000 pounds of matzoth, 13,000 gallons of Passover wine and 20,000 prayer shawls. Some notion of the magnitude of J.W.B.'s religious service may be gathered from a comparison of 1936 with 1943; 2,414 Jewish men were served at the high holy days in the United States and abroad in 1936; in 1943, 355,000 attended 2,579 services.

With the advent of World War II, it became necessary to provide war service for the armed forces and a new agency, U.S.O., was created representing the citizens of the United States by a group of the large national welfare organizations, Y.M.C.A., Y.W.C.A., National Catholic Community service, Salvation army, National Travelers Aid association and the National Jewish Welfare board. J.W.B. served through the channel of U.S.O., of which it became a member agency, in the greatest interfaith experiment in U.S. history. In U.S.O., J.W.B. served the total war effort and at the same time helped meet the special needs of Jews. J.W.B. became active at the start in 89 U.S.O. clubs, and at the peak of U.S.O. service operated 225 of them. In 1946, it had 681 army and navy committees all over the world-in 1941, 193. The army and navy staff grew from 44 in Jan. 1940, to 590 in October 1945. J.W.B. served at all points in the United States and at U.S.O.'s overseas offshore points: Panama Canal Zone, Hawaii, Trinidad, Puerto Rico, Alaska, Philippines and Bermuda. In 1939, the board erected a permanent building at Balboa in the Canal Zone on land furnished by the armed forces, and in 1945 the board acquired by purchase a building in Honolulu, Hawaii. Both of these buildings were operated for the benefit of the armed forces, and the building in Honolulu was adapted also for use as a Jewish community

To compile the record of Jewish participation in the war, J.W.B., through its Bureau of War Records, carried out the mandate of the U.S. Jewish community to collect and preserve the facts of Jewish participation and achievement in the war. The bureau conducted the work of research and identification of Jews in the service, with a professional staff and 1,003 volunteer war record committees and correspondents, including 12 state committees (1946).

Serving patients at army and navy hospitals after 1917, J.W.B. met the special spiritual and welfare needs of Jewish men at 101 army general, navy general and seven naval convalescent hospitals in 1943. In 1945, its staff of 92 U.S.O.-J.W.B. workers, chaplains and rabbis served at 155 army and navy general convalescent and regional hospitals. These had the aid of 65 volunteer committees.

J.W.B. had been accredited since 1925 by the Veterans'

administration to handle claims for disabled veterans. In addition, it offered "spiritual therapy" to the hospitalized veterans in the form of religious ministration, personal counselling and spiritual and morale services. In 1946, it was serving the needs of veterans of both wars at 87 of the 97 veterans' hospitals through civilian rabbis, lay workers and chaplains. Other hospitals were served by J.W.B. representatives or lay co-workers in the community. Under J.W.B. guidance, 80 cities had organized committees to aid veterans to find their way back to civilian life.

In 1943, J.W.B. reached an agreement with the Jewish War Veterans to join efforts in order to eliminate duplication in the aid to veterans seeking benefits for disabilities. A field staff of 17 trained workers in the principal areas of the country aided veterans to secure pensions, vocational rehabilitation and other benefits of the G.I. Bill of Rights. By the end of 1946, about 2,000 contacts a month were being made by individuals for this assistance; in 1941 the board had handled a total of 10,476 personal welfare cases, government claims of disabled veterans, dependents and beneficiaries. In 1945, 5,176 claims for pensions were handled by J.W.B. field staff. In the first 6 months of 1946, 15,070 veterans contacted the board for a total of 7,952 claims.

The needs of servicemen in isolated areas which U.S.O. could not easily reach, and which were far from communities having a Jewish population, led to the formation in 1942 of the J.W.B. women's division, a coalition of nine national affiliated Jewish women's organizations representing 250,000 volunteers in 43 cities. In 1943, 34 cities were serving 40 camps and areas through the women's division. In 1945, 125 military installations were served through its projects, which included "Serve-A-Camp"; "Serve-A-Chaplain"; "Serve-A-Hospital" and "Serve-A-Hospitality Center" (overseas). A total of 102 communities were organized and served 177 areas. Besides the "Serve-A" projects, the women's division was responsible for the dispatch of 1,125,-300 gifts, sent in response to requests, for religious holiday use.

J.W.B.'s role in the war effort paralleled its welfare and educational activity on behalf of Jewish youth in 288 Jewish community centres. As the national association of Jewish community centres, Y.M.H.A.s, Y.W.H.A.s and similar groups in the United States and Canada, with a total membership of 427,000 men and women, young people and children, J.W.B. assisted these local groups to plan programs of recreational and educational activity and Jewish culture for their membership.

Under J.W.B. guidance, Jewish centre membership grew from 370,000 in 1937 to 427,000 in 1945. Attendance at Jewish centres in 1945 approximated 25,000,000 boys and girls, men and women. In 1937, the Jewish Center Lecture bureau of J.W.B. gave 911 services to 425 organizations. In 1945, it made 1,153 bookings. The J.W.B. staff made 1,252 visits to 183 communities in 1937, while in 1945, the staff made 1,500 visits to 200 communities, with 300 organizations receiving service.

Concern with the problems raised by the entry of youth into war jobs led the J.W.B. to set up in 1945 a Department of Youth Service. J.W.B. became a member of A.Y.S.O. (Associated Youth Serving organizations) and of the youth division of the National Social Welfare assembly. Under J.W.B. leadership, Jewish centre professional staffs grew from 1,000 in 1936 to 1,250 in 1946. The cost of Jewish centre buildings increased to \$40,000,000 from \$35,000,000 in 1937. In 1943, J.W.B. became sponsor-coordinator of the Jewish Book council and in 1945 of the Jewish Music week project. During the war years, J.W.B.

encouraged centres to serve the war effort through day care of children, first aid and nutrition programs, air raid protection, scrap collections, war bond purchases and many other war-supporting activities.

The 29th annual convention in May 1946, the first in 4 years, was attended by delegates from 38 states who witnessed the bestowal of an award on J.W.B. "for unique and outstanding service" by the war and navy departments. In addition, they heard a message from President Truman who commended J.W.B. for its "world-wide program of services and activities on behalf of the welfare, religious and morale needs of men and women in the service," which "contributed substantially to victory."

(F. L. W.)

Jews, Distribution of

The most significant fact in the population distribution of Jews during World War II and in the years immediately preceding and following, was the diminution of their total number throughout the world, from roughly 16,000,000 in 1937, to something between 11,000,000 and 12,000,000 at the end of 1946. The "Judenrein" policy of Germany's National Socialist party was the primary cause for this loss of numbers. As the German armies moved across Europe, citizens of Jewish faith of the occupied countries were singled out for destruction. In lesser degrees, the satellite nations under the influence of Hitler adopted stringent anti-Semitic policies. While such policies were not always so explicitly designed for the liquidation of Jews as in Germany itself, they nevertheless achieved similar results.

The greatest change in the distribution of Jews therefore, occurred in those places where nazi control endured longest and with the most direct authority; in central and eastern Europe. This area, in prewar years, contained some of the most densely-populated Jewish areas in the world, as follows: Austria, 190,000; Bulgaria, 48,398; Czechoslovakia, 356,830; Germany, 240,000; Hungary, 440,567; Latvia, 93,479; Lithuania, 155,125; Poland, 3,113,900; Rumania, 900,000, and Yugoslavia, 68,405. In 1937, approximately one-third of the world's population of Jews, therefore, lived between the Rhine and the soviet frontiers.

Other large centres of Jewish population in that year were: France, 240,000; Great Britain and Northern Ireland, 300,000; Palestine, 424,373; U.S.S.R., 3,020,141; United States, 4,770,000. The rest of the nearly 16,000,000 Jews were residents in, or citizens of, some 80 countries or territories, from Tanganyika with a known population of 10 Jews to Argentina with some 260,000.

The impact of national socialism may best be gauged by a comparison of these figures with the most reliable figures obtainable some 14 months after the end of World War II. The appendices to the Report of the Anglo-American Committee of Inquiry showed the following estimated postwar populations, in the winter of 1946:

		V -
Austria	45,000	Hungary 200,000 U.S.S.R. 2,500,000 (including Estonia, Latvia and Lithuania)
Silesia and Slovakia)		Poland 80,000
Germany	20,000	Rumania 335,000
(not including wards		Yugoslavia 11,000
of occupying powers		•
in displaced persons		

A decade of enforced migration, by those fortunate enough to escape, brought about these reductions. More than 1,000,000 Jews were known to have escaped nazidominated Europe, and no record of population of Jews

camps)

for this period would be complete without some notice of the phenomenon of "refugeeism." The principal havens and approximate numbers who reached them were as follows: U.S.S.R. (beyond the Curzon line), 350,000; Palestine, 250,000; United States, 200,000; Latin America, 120,000; Great Britain, 60,000; Switzerland, 31,000; other countries, 50,000.

The redistribution by migration had not yet halted by the summer of 1946. The Anglo-American Committee of Inquiry reported that 500,000 Europeans of Jewish faith would have to, or wished to, leave Europe. Most of them were originally from central and eastern Europe. At the time of the committee's investigation, about 140,000 of this 500,000 were in displaced persons camps. The rest were a part of some 800,000 Europeans, living as refugees in countries other than their native lands, unwilling or unable to return to their homes. In addition there were 5,000,000 Jews in the United States; 300,000 in England; 160,000 in France and 25,000 in Belgium. Holland's prewar population of Jews had shrunk to 25,000. Palestine's Jewish population meanwhile had increased to some 650,000

Certain trends were discernible. The centre of gravity of Jewish population had shifted from the heart of the European continent. The flow of population was in two directions; westward to the United States and eastward to Palestine. (See also Anti-Semitism.) (El. Br.)

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Jinnah, Mohammed Ali

), Indian lawyer and politician, was Jinnah (1876educated at Karachi, India, and in Great Britain. He served on the Imperial Legislative council from 1910 to 1919 and in 1916 was named permanent president of the Moslem league. During World War I, Jinnah urged Moslem-Hindu unity and persuaded the Congress party and Moslem league to hold joint sessions. But after the spectacular victories of the Congress party in the elections of 1936-37, the Moslem league became fearful of Hindu predominance in the government, and Jinnah's policy became increasingly hostile to the Congress party. The suspicion of Hindu domination was also responsible for Jinnah's willingness to accept the British White Paper of 1939, which deferred the question of India's independence until after the close of World War II. In 1940 Jinnah and the Moslem league formulated their demands in terms of "Pakistan," the existence of a separate Moslem state. When the British released their plan for an independent India in May 1946, Jinnah expressed dissatisfaction, and the Moslem league, as well as the Congress party, rejected the plan.

Jitterbug See Dance.

Jodl, Alfred

Jodl (1892?-1946), German army officer, served with the Bavarian army in World War I. After the armistice in 1918, he was attached to the ministry of war and later to the German intelligence service. Jodl had advanced to the rank of major general by 1939, and was a colonel general throughout most of World War II. In late 1940,

when Franz von Halder opposed a German attack on the soviet union, Jodl replaced him, first as Hitler's chief military adviser and then as chief of staff. Jodl headed the German delegation that signed the German surrender at Gen. Dwight Eisenhower's headquarters in Reims, France, on May 7, 1945. Indicted as a war criminal, Jodl went on trial with a score of other high-ranking Germans at Nuernberg in Nov. 1945. He was sentenced to death at the conclusion of the war crimes trial and hanged with nine others in the Nuernberg jail yard Oct. 16, 1946.

Johannesburg

City of the Transvaal province of the Union of South Africa, Johannesburg continued its rapid industrial expansion throughout 1937-46. Its prosperity and growing importance had made it the chosen site of the Empire exhibition which came to an end in Jan. 1937, and in 1940 gold mining in the area had been so productive that the Transvaal was recognized as the world's leading gold centre, supplying 34.7% of world production. Gold production in 1945 reached the high figure of 12,213,545 fine oz., valued at more than £100,000,000. It was believed that discoveries of gold in the Odendaalsrust area of the Orange Free State would oust Johannesburg from its place as the centre of gold production in the union, but other industries growing up and thriving there would maintain its reputation as a rich and spreading city. The population figure for 1946 was 750,000, an advance of 230,616 on the census figure for 1936.

World War II had little effect on its industries, but preparations were made for an air raid precaution scheme that was never forced into action. The independent views of the mining population were emphasized by the crises of war, and on Jan. 31 and Feb. 1, 1941, serious riots broke out between soldiers on leave and members of the Ossewabrandwag.

Johnson, Hugh Samuel

Johnson (1882-1942), U.S. soldier and government official, was born Aug. 5, 1882, in Fort Scott, Kan. He joined the army when he was 15, and later entered the U.S. military academy, from which he was graduated in 1903. He served in the Philippines, 1907-09. On returning to the United States, he studied law and was judge advocate with Pershing's forces during the Mexican campaign of 1916. During World War I, he helped organize and establish the machinery for the draft law and also served on the war industries board. A brigadier general when the war ended, he resigned in 1919 to enter private business. He was president of an automobile carpet company in 1933, when President Roosevelt called him to administer the National Industrial Recovery act. Gen. Johnson was given wide authority to operate the machinery intended to guide business in the national recovery program. He resigned a little over a year later when the NRA was reorganized. He then became a newspaper columnist for the Scripps-Howard chain and displayed the talent for blunt language and colourful invective that earned him the nickname of "Old Ironpants." At first, Johnson defended the New Deal against the "tories." Later, he bitterly attacked the Roosevelt administration and its "radical" trend. Johnson died in Washington, D.C., April 15, 1942.

Johnston, Eric A.

Johnston (1896-), U.S. industrialist, was born

Dec. 21, 1896, in Washington, D.C. He graduated from the University of Washington, Seattle, Wash., in 1917 with a bachelor's degree in law and served as captain in the marine corps from 1917 to 1922, when he returned to Spokane. After a number of years as a successful business executive, he was elected president of the Chamber of Commerce of the U.S. in 1942. In Feb. and March 1943, in his role as chairman of the U.S. Commission of Inter-American Development, Johnston toured through seven countries of South America, conferring with government leaders and businessmen on plans for postwar economic co-operation. He visited England in August of that year and urged that postwar world trade be based to the maximum extent on free competitive enterprise. In the summer of 1944 he spent six weeks in the soviet union to explore postwar trade possibilities; he wrote a number of articles on his impressions of the U.S.S.R., expressing his optimism regarding postwar trade relations with the United States. In addition to his chamber of commerce position, where he was regarded as representative of the more liberal and progressive industrialists, Johnston was a member of the Economic Stabilization board and of the Economic Advisory committee of the state department and a trustee of the Committee for Economic Development. In March 1945, Johnston, together with A.F. of L. and C.I.O. leaders, signed the business-labour postwar peace charter, outlining principles designed to establish postwar industrial harmony and providing for social security and the arbitration of industrial disputes. On Sept. 19, 1945, Johnston resigned his post as president of the chamber of commerce to become president of the Motion Picture Producers and Distributors of America.

Johnston Island

See Pacific Islands, U.S.

Joint Aircraft Committee

See International Organizations.

Joint Chiefs of Staff

See Chiefs of Staff, Combined and Joint.

Joint War Committees (U.S. and Canada)

See Canadian-U.S. War Committees.

Joint War Committees (U.S. and Great Britain) See British-U.S. WAR BOARDS.

Jones, Jesse Holman

Jones (1874-), U.S. business executive and government official, was born in Robertson county, Tenn., on April 5, 1874. Prior to his career in government, he engaged in extensive industrial, financial and real estate operations in Texas and bought control of the Houston Chronicle, of which he became publisher. President Hoover appointed him a director of the Reconstruction Finance corporation in 1932, and he became chairman the following year. In July 1939 Jones was appointed administrator of the Federal Loan agency. In addition to this office, he was named secretary of commerce on Sept. 13. 1940, to succeed Harry L. Hopkins. Jones came under fire in 1942 when the Truman committee of the senate blamed him for much of the rubber shortage, charging that he had overruled proposals to expand the production of synthetic rubber. He was again attacked, in June 1943, by Vice-President Henry A. Wallace, chairman of the Board of Economic Warfare, for alleged failures to supply funds to acquire critical materials. During the acrimonious pubItc dispute that followed, President Roosevelt eliminated the Board of Economic Warfare and rebuked both Wallace and Jones. But the fundamental difference in policy represented by Wallace, an advanced New Dealer, and Jones, an essentially conservative financier and businessman, persisted. On Jan. 21, 1945, Jones acceded to the president's request that he resign from his posts in favour of Wallace. Although Wallace became secretary of commerce, he was not confirmed by the senate for the Federal Loan agency position; Fred M. Vinson succeeded Jones in the latter post.

Jones, Marvin

Jones (1886-), U.S. jurist and politician, was born near Valley View, in Cooke county, Tex., Feb. 26, 1886. He was graduated from Southwestern university, Georgetown, Tex., in 1905, received his law degree from the University of Texas, Austin, Tex., and was admitted to the Texas bar in 1907. He established a private practice of law in Amarillo, Tex., and in 1913 was appointed chairman of the board of legal examiners in the 7th supreme judicial district of Texas. In 1917 Jones was elected to the house of representatives, where he served continuously for 24 years. As chairman of the house committee on agriculture, he sponsored much of the New Deal farm legislation; he helped draft the Agricultural Adjustment act and, when that was declared unconstitutional, wrote the compromise Soil Conservation act. On Nov. 20, 1940, he resigned from the house to accept an appointment as judge of the U.S. court of claims. During World War II Jones acted as principal adviser on food problems to the director of economic stabilization, James F. Byrnes, and served as conference president and chairman of the U.S. delegation to the United Nations conference on food and agriculture at Hot Springs, Va., in 1943. Named head of the war food administration on June 28, 1943, to succeed Chester C. Davis, he pursued a policy of maintaining prices by means of government subsidies. On July 1, 1945, Jones resigned to resume his duties as judge of the court of

Jong, Jan de

Cardinal de Jong (1885-), archbishop of Utrecht, was born at Nes, off the shore of the province of Friesland, Holland, on Sept. 10, 1885. Ordained in 1908, he later studied theology in Rome and was professor of history in the major seminary of Ryzenburg, Holland. Named auxiliary bishop of Utrecht on Aug. 3, 1935, he became ordinary of that see the following year. Archbishop de Jong took a bold stand against co-operation with the nazis during the occupation of The Netherlands in World War II. He refused to allow church services to be broadcast over German-controlled radio stations, denied the right of attendance at Catholic schools to storm troopers, and refused the sacraments of the church to any member of a Dutch nazi-controlled party. Archbishop de Jong was proclaimed cardinal by Pope Pius XII on Feb. 18, 1946, although he was unable to be present at the consistory in Rome.

Jordana y Souza, Francisco Gómez

Jordana (1876–1944), Spanish army officer and politician, received his education at the Spanish Military academy and Staff college. He saw service in Cuba early in his career, and in 1903 was attached to the general staff. Later he became an instructor of the Escuela Superior de Guerra. Promoted to the rank of brigadier general in 1920, he was placed in charge of Moroccan affairs in the

Primo de Rivera government. In 1928, with the rank of lieutenant general, he was appointed high commissioner of Morocco. Jordana supported the 1936 uprising against the Spanish republican government and subsequently held a number of important posts in the Franco dictatorship. Vice-president and minister of foreign affairs in 1938, he became president of the council of state the following year. He held this post until Sept. 3, 1942, when he again became foreign minister, succeeding Franco's brother-inlaw, Ramón Serrano y Suñer. Mildly pro-German during the period of axis victories, he watered down this attitude during the decline of German power beginning in 1943. He then strove to ease Spain away from its embarrassing pro-German foreign policy and adhered cautiously to what was described as "strict" neutrality. He died in San Sebastian, Aug. 3, 1944.

Jowitt of Stevenage, Viscount

Viscount Jowitt, (Wılliam Allen Jowitt) (1885—), was educated at Oxford university and was admitted to the bar in 1909. A gifted orator, he prospeted as a barrister; he figured as counsel in many notable cases, including that of Princess Irina Youssoupoff, who opened a libel suit against the British film company that produced the moving picture Rasputin, and in the duke of Windsor's libel suit against the publishers and author of Coronation Commentary.

Entering politics, he joined the Liberal party and in 1922 he was elected as Liberal M.P. for the Hartlepools. He was knighted in 1929 and in May of that year was elected Liberal M.P. for Preston. Experiencing a change of conviction later, he joined the Labour party the following month. Jowitt, who was attorney general from 1929 to 1932, was later expelled from the Labour party for supporting Ramsay MacDonald's national government; but in 1936 he was reinstated; in 1939, he was returned to parliament, again as Labour member, from his constituency in Ashton-under-Lyne.

Named solicitor general in 1940, he held this post until 1942 and was minister without portfolio in the Churchill coalition government, 1943–44. In 1944, he was appointed minister of National Insurance, serving until 1945. On July 27, 1945, Attlee named Jowitt lord chancellor in the new Labour government. He was raised to the peerage in 1945 as Baron Jowitt of Stevenage; in Dec. 1946 he was created viscount.

Judaism

See Jewish Religious Life.

Judiciary, British

World War II produced a number of modifications in the form of the British judiciary which though sweeping in theory were of little practical importance. An emergency system was provided by acts of parliament under which the lord chancellor was empowered to vary the locations and jurisdictions of English and Welsh courts, and to set up special new courts if necessary; these plans were never carried out, for they were intended for use in the event of a partially successful invasion of Great Britain. Similar powers were authorized in Scotland where they were to be used by the lord president of the court of session in respect of that order, and by the lord justice general in respect of the high court of judiciary. The only wartime measures actually carried out were the reduction in the number of jurors in a jury from 12 to 7, and, in civil

cases only, the abolition of juries except when specially ordered by a judge in a particular case.

Permanent alterations in the form of the judiciary were also enacted and carried into effect. Justices of the peace were put by the lord chancellor on special supplemental lists as soon as they were considered too old (or otherwise unfit) to officiate in court; they were then invested with all the powers and rights of justices of the peace (such as conducting county business and signing warrants) except that of sitting in court and giving judicial decisions. At quarter sessions legally qualified and salaried chairmen and deputy chairmen were appointed whenever a quarter sessions meeting requested the lord chancellor to do so; this began to be a regular practice. When such chairmen or deputy chairmen presided, the jurisdiction was enlarged and many new types of cases, previously triable only at assizes or in London, could be tried at quarter sessions. Juvenile courts, composed of specially selected justices of the peace nearly always including a woman (or in London, of such justices with or without a metropolitan magistrate), were given powers to deal specially with children and young persons so as to conduct proceedings in a less formal and frightening atmosphere (not in the usual courthouses) and to correct and reform rather than to punish. County court judges' jurisdiction was extended to matters affecting up to f_{200} in value arising out of contracts, where the sum had previously been only £100 or less; this seemingly small alteration greatly increased the scope of county courts. All county court judges were also, in 1946, made divorce commissioners, with powers of divorce judges of the high court, and were expected to exercise this jurisdiction about twice a month and so deal with many simpler divorce cases locally. The ancient court of the mayor and City of London was enabled to act in two ways, either on the basis of high court procedure (when appeals went to the court of appeal) or less formally (and more expeditiously) on the basis of county court procedure when appeals went to the high court. In the high court of justice itself, alterations were made to the number of judges in each division, which became: in the chancery division not less than 5; in the King's bench division not less than 17 and in the probate divorce and admiralty division not less than 3. A total of not less than 25 judges had to be in office at once and the lord chancellor might appoint up to 32 if business was sufficient to occupy them, as it was throughout the postwar period. Another high court development was the transfer of judges from one division to another, which became possible under an act, so long as the residents of the divisions concerned (the lord chancellor, the lord chief justice and the president of the probate divorce and admiralty division respectively) and the judge concerned agreed; the lord chancellor had to consent in all cases of judges' transfers even if his division were not affected. In addition, larger numbers of special commissioners were appointed with powers of judges of the high court both on assize in the country in King's bench division (including criminal) cases and for divorce only in London.

These permanent developments were aimed successfully at restricting the powers of justices who had no legal qualifications or were physically unfit (except in juvenile cases where their jurisdiction and powers were extended), at extending the jurisdiction of legally qualified justices and judges and at expediting the hearing of cases both in general for the future and in particular in respect of the accumulated aggregation of matters which had been put

aside during, and because of, World War II. This expedition was largely effected by the untiring and skilful administrative perseverance of two outstanding judicial personalities, Lord William Allen Jowitt and Lord Rayner Goddard (both appointed in 1945), in their official capacities as lord chancellor of Great Britain and lord chief justice of England respectively.

In addition to the truly judicial tribunals a number of quasi-judicial tribunals were established (such as the rent tribunals for furnished lettings, the pensions appeals tribunal and the civil reinstatement tribunal) with exclusive jurisdiction under certain acts in special spheres and with no appeal from them to higher courts; these tribunals were not necessarily (nor usually) presided over by a legally qualified person, did not make use of legal procedure but replaced the ordinary courts in respect only of the matters assigned to them.

While they were undoubtedly successful in dealing quickly and on the whole fairly with a large volume of cases, they were inclined to appear arbitrary and unpredictable in their decisions, which might vary greatly from place to place since there was not such a common bond of outlook, training, or experience between their chairmen and members as existed, for example, among the county court judges.

(See also Law.)

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Jugoslavia

See Yugoslavia.

Juin, Alphonse Pierre

Juin (1888?-), French army officer, was born in Bone, Algeria, and was educated at St. Cyr, French military academy. During World War I he served as captain with Moroccan forces, and later became chief of staff to Marshal Lyautey. A divisional commander during the battle of France in June 1940, he was taken prisoner by the nazis and was released a year later. There were indications that Pierre Laval had arranged for Juin's release in order to have him supplant Gen. Maxime Weygand as French proconsul in Africa. On Nov. 20, 1941, Juin succeeded Weygand as commander in chief of French forces in North Africa. At the time of the Allied landings in Morocco and Algeria in Nov. 1942, Juin and Admiral Jean Darlan agreed to surrender Algiers after only 16 hours of hostilities. Captured by the Allies, Juin carried on negotiations with them and concluded an armistice, acting under Darlan's authority. After the latter's assassination, Juin was reappointed commander in chief of French forces in North Africa on Dec. 29, 1942. Although he was then unpopular with the Gaullists, the French Committee of National Liberation approved the appointment. Juin led French armies in Tunisia and on the Italian front in Dec. 1943, and was named chief of the general staff for national defense in Aug. 1944.

In June 1945 he was designated resident general of $^{\circ}$ Morocco.

Juliana

Princess Juliana of the Netherlands and Lippe-Biesterfeld (1909—), was born at The Hague on April 30, 1909, the only child of Queen Wilhelmina and her consort, Henry, Duke of Mecklenburg (d. 1934). She was educated at the University of Leyden, and from an early age enjoyed popularity throughout the country. On Jan. 7, 1937, she was married to Prince Bernhard Leopold of

Lippe-Biesterfeld (born at Jena, June 29, 1911), son of Prince Bernhard Casimir (d. 1934). On Jan. 31, 1938, Princess Juliana gave birth to a daughter, Princess Beatrix Wilhelmina Armgard. Her second child, Princess Irene Emmà Elizabeth, was born Aug. 5, 1939. Her third daughter Princess Margriet Francisca was born Jan. 19, 1943, in Canada.

Princess Juliana fled from the Netherlands after the German invasion of May 10, 1940, and in June she set up residence in Rockliffe, a suburb of Ottawa, Canada. Prince Bernhard served as commander of the Netherlands interior forces under Gen. Eisenhower, when the Allies opened their advance on the continent in 1944. In Sept. 1944, Juliana rejoined her mother, Queen Wilhelmina, in England, and in July 1945, she returned to her homeland.

Julius Rosenwald Fund

See Societies and Associations.

Julieville, Pietro Petit de

See PETIT DE JULLEVILLE, PIETRO.

Jumping

See Track and Field Sports.

Jungle Warfare

See TACTICS OF WORLD WAR II; WORLD WAR II.

Junior Colleges

See Universities and Colleges.

Justice, U.S. Department of

See GOVERNMENT DEPARTMENTS AND BUREAUS.

Jute

India, producer of most of the world supply of jute, was troubled by over-production in 1937, but the trouble disappeared quickly when World War II began in 1939. The British government ordered 200,000,000 jute bags for use as sand bags alone. World production in 1937 was estimated at 3,516,600,000 lb., of which India produced 3,462,400,000 lb. Indian production was increased to 5,268,800,000 lb. in 1940, then declined to 2,191,500,000 lb. in 1944. Although none of it was grown in the United States, jute became a crop of great importance to U.S. farmers, providing the most indispensable bagging material and burlap, and also being made into other useful cloths. Only in the latter years of the decade had cotton and paper bags been substituted for burlap in considerable quantities.

Imports of jute and jute goods into the U.S. averaged 794,000,000 lb. in the prewar period 1934–38. Exports, mostly in the form of bags, amounted to 17,000,000 lb., leaving 777,000,000 lb. for domestic consumption. In 1939, at the beginning of the war, the 858,000,000 yd. of burlap were used as follows: bags, 674,000,000 yd.; upholstery, 49,000,000 yd.; automobiles, 35,000,000 yd.; textiles, 25,000,000 yd.; carpets, 20,000,000 yd. and the rest for a wide variety of uses. By far the largest use was for bags for farm products and fertilizers, and as coverings for baled cotton. The limited shipping reduced imports from India from 262,900,000 lb. of jute and jute butts in 1937 to 78,631,000 lb. in 1939, and an average of about 150,000,000 for 1940–45. In addition about 12,000,000 gunny bags were imported annually.

Various war measures were adopted to supply the shortage of bags and cordage. Cotton and paper bags were substituted for seeds and fertilizers, and other fibres were

	(In Tons)																				
1937										77,888	1942										109,392
										37,702											52,492
										45,924											29,668
										55,708	1945										31,005
1941	٠	٠	٠	٠	٠	٠	٠	٠	•	80,00 <i>7</i>	1940	•	٠	•	٠	٠	٠	•	•	•	77,000

Imports of Jute into the United States, 1937-46

tried, such as abaca, sisal, henequen, etc., from South America. The distribution of the jute manufacturing industry before World War II was shown by the number of looms in different countries. India led with 66,700, Germany 9,600, Great Britain and Ireland 8,500, France 7,000, Brazil 5,000, Italy 5,000, Belgium 3,000 and the United States 2,750. All other countries made up the remainder of the total of 117,200 looms. Efforts to develop a plastic cloth substitute for burlap were not commercially successful during the war because of the lower cost of natural jute. (J. C. Ms.)

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Juvenile Delinquency

See CHILDREN IN WORLD WAR II; CHILD WELFARE; CRIME

Kaiser, Henry J.

Kaiser (1882-), U.S. industrialist, was born May 9, 1882, in Canajoharie, N.Y. After 16 years with road construction projects in Canada, California and Cuba, 1914-30, he entered the dam construction field and in 1933 became head of the Six Companies, Inc.-the organization that built Boulder and Parker dams. In 1942, he obtained control of four large shipyards on the west coast. He revolutionized shipbuilding by prefabricating ship sections. Kaiser became interested in aircraft building in 1943. In March of that year he was made chairman and, in October, president of Brewster Aeronautical Corp. which was building Corsair fighters for the navy. In Jan. 1945 he was invited by Pres. Roosevelt to head the United Nations war relief clothing drive. He also headed the 1946 drive. On July 25, 1945, Kaiser and Joseph W. Frazer formed the Kaiser-Frazer Corp. and announced plans for two postwar automobiles. The corporation acquired the Willow Run bomber plant in Michigan and the Douglas Aircraft plant in Long Beach, Calif.

Kale

See VEGETABLES.

Kalinin, Mikhail Ivanovich

Kalinin (1875-1946), Russian statesman, was born of peasant stock Nov. 20, 1875, in Verkhnaya Troitsa, Tver (Kalinin) province. An active revolutionary from his early youth, he was frequently arrested and exiled for his agitation against Tsarist rule. In 1911, he went to St. Petersburg to join the staff of the clandestine Bolshevik publication, Pravda, and there worked closely with Lenin and Stalin. After the outbreak of the Russian Revolution in 1917, Kalinin was elected to the central committee of the Communist party and in March 1919, on Lenin's recommendation, he was elected chairman, or president of the all-Russian Central Executive committee-then the supreme governing body of the soviet union. In 1922, he became chairman of the central executive committee of the U.S.S.R. Following the adoption of the constitution in 1936, he was elected president of the praesidium of the

supreme soviet. He was also a member of the Communist party's *Politburo*. Although officially Kalinin held the post of chief of state for 27 years, actually he wielded little power. His role was that of a mild "elder statesman," known for his intense loyalty to Stalin. Kalinin retired in April 1946 as president of the praesidium because of ill health and died the following June 3.

Kallió, Kyösti

Kallió (1873–1940), Finnish statesman, began his political career in 1904, when he was elected to the Diet. He was Finnish minister of agriculture from 1919 to 1922 and four times prime minister, in 1922–24, 1925–26, 1929–30 and 1936–37. In Feb. 1937 he was elected president of Finland, remaining in office until after the "winter war" with the soviet union had ended with Finland's defeat in March 1940. Kallió resigned on Nov. 28, 1940, and died the following Dec. 19 at Helsinki.

Kaltenbrunner, Ernst

Kaltenbrunner (1901–1946), Austrian politician, studied at the University of Prague, where he won a degree as doctor of philosophy in 1926. He later practised law, became an assistant judge at Salzburg, joined the Austrian nazi party in 1932 and was leader of the SS (Elite Guards) in Austria in 1935. After the Anschluss he became the official head of the Austrian storm troopers. He was also appointed secretary of state for security in Austria, holding this post until 1941.

Kaltenbrunner was appointed chief of the security police on Jan. 30, 1943. Following the assassination of Reinhard Heydrich by Czechoslovak patriots in June 1943 he was made head of the reich security head office. He was taken prisoner in Austria by U.S. troops on May 15, 1945, and was indicted on charges of having committed war crimes by the International Military tribunal at Nuernberg, Aug. 29, 1945. He was convicted of committing war crimes and crimes against humanity, was sentenced to death and was hanged Oct. 16, 1946, at Nuernberg prison.

Kameroons

See British West Africa; French Colonial Empire.

Kansas

A central state of the United States, Kansas was admitted to the union Jan. 29, 1861; popularly known as the "Sunflower state." Total area, 82,276 sq.mi., of which 82,113 sq.mi. are land; population (1940) 1,801,028 (a decrease of 79,971 or 4.3% from 1930). Of the state's population in 1940, 753,941 were urban, or 41.9%; 96.3% were white, 3.7% Negro and other races, 2.9% foreign born. The Kansas census of March 1, 1945, reported the population as 1,793,066, a loss of 10,842 from 1944. Capital, Topeka (67,833). The two largest cities in 1940 were Kansas City (121,458) and Wichita (114,966).

In the biennial election of 1936, Walter A. Huxman, a Democrat, had been elected governor, but Republican majorities were returned to both houses of the legislature. Other state officials in 1937 were W. M. Lindsay, lieutenant governor; Frank J. Ryan, secretary of state; George Robb, auditor; J. J. Rhodes, treasurer; Clarence V. Beck, attorney general; W. T. Markham, superintendent of public instruction; Charles F. Hobbs, commissioner of insurance. Principal legislation for the 1937 session included provisions for soil conservation; an act regulating the relations between the state banking system and the Fed-

eral Deposit Insurance corporation; a Social Welfare act providing for co-operation with the Federal Security act, and applying to old-age assistance, to dependent children and to the blind; an act providing state aid to the weaker elementary schools; acts relating to alcoholic liquor, one legalizing for the first time since 1880 the sale of liquor containing not more than 3.2% of alcohol, and other acts providing for taxation and regulation of the liquor business. A sales tax of 2% on the sale of tangible personal property was authorized.

A special session of the legislature met in 1938 to amend the laws of the previous year respecting the financing of the social welfare program to allocate sales tax receipts and to provide for reduction in local property taxes. An emergency social welfare fund was set up to aid counties having extraordinarily heavy social welfare costs, and several special measures were passed to facilitate local school financing and to provide more effective highway and motor traffic control. In the 1938 election, Payne H. Ratner, a Republican, was elected governor, together with a Republican legislature. Other state officers elected were Carl E. Friend, lieutenant governor; Frank J. Ryan, secretary of state; George Robb, auditor; Walter E. Wilson, treasurer; Jay S. Parker, attorney general; George L. Mc-Clenny, superintendent of public instruction; Charles F. Hobbs, commissioner of insurance. U.S. Senator George McGill, a Democrat, was defeated for re-election by Ex-Governor Clyde Reed, the result being attributed to a farm revolt against the Roosevelt agricultural program. In 1939, the regular session of the legislature enacted laws for the amendment and development of statutes relating to drainage districts, the conservation of oil and gas, grain warehouses, standards for dairy products, workmen's compensation and social welfare. More important was the adoption of a new corporation code and a probate code. The legislative council was also instructed to study administrative and tax-collecting agencies and to examine the tax code for the purpose of revising and codifying the tax laws that had accumulated since 1861. The Republican campaign pledge of exemption of food from the sales tax proved impracticable; another, the abandonment of sales tax tokens, was carried out.

In the 1940 election, all executive officers, Republicans, including Gov. Ratner, were re-elected. The governorship was decided by outstate absentee ballots: Gov. Ratner received a majority of only 430 votes. The defeated candidate, William H. Burke, unsuccessfully challenged the constitutionality of the outstate voting law. In the presidential election of 1940, Wendell L. Willkie received 489,160 votes, Franklin D. Roosevelt 364,725.

The 1941 legislature enacted the largest body of laws of any session since 1905: 401 bills and joint resolutions. Among the more important laws enacted were the teachers retirement plan, the merit system, re-enactment of the interstate oil compact, ratification of the Republican river tri-state compact, authorization of a state committee on interstate co-operation, permission to counties to receive lump-sum payment from the United States in lieu of taxes on government projects, safeguarding of absentee voting, flood control, drainage and irrigation laws, outlawing of communistic and similar parties, prohibiting labour unions from discriminating against Negroes, creation of a state home guard, authorization of a state council of defense and redistricting of the state into six instead of seven congressional districts. The defense effort in 1941 expanded greatly the aircraft industry in Wichita, and defense plants were under construction in Kansas City, Parsons and Pittsburg.

			tatistical De			
, in	To		ucation (Pub	-		
		1934	1936	1938	1940	1942
Elementary school p	oupils	318,614	307,604 106,671	289,343 107,319 11,860	254,017 111,953	251,929 99,441
Elementary teacher	s	102,896 12,238	12,114	11,860	18,944	
High school teacher	s	4,885	5,225	5,422)		
	T	able II.—P	ub'ic Welfo	re		
	(Money	figures in t	housands o	f dollars)		
			37 193			
Cases on general r Cost of general reli	elief	18,	757 19,8 276 \$2	94 18,63 81 \$ 23	3 19,726 0 \$308	5 12,186 8 \$179
Recipients of old-ag	et Je pensions		270 \$2 22,1		27,147	28,885
Cost of pensions .			\$4	34	27,147 \$530 14,857	\$560 7 15,634
Dependent children Blind receiving aid			11,1	06	1,27	3 1,402
Workers under une	mployment c	om-	170 4	80 144,86	4 144 300	•
pensation					4 140,300	•
			Communicati housands o			
	•	1937	1938	1939	1940	1941
Highway mileage			9,862	9,864		9,368
Expenditure on high		\$20,198	\$19,221	9,864 \$15,967	\$20,628	
Railroad mileage		8,707	8,667	8,664		8,567
	Tabl	e IV.—Ban	king and Fi	nance		
	(Money	figures in t	housands o	f dollars)		
	1937	1938	1939	1940	1941	1942
State revenue	\$42,744 42,175	\$51,929 41,441	\$52,416 36,902	\$43,352	\$45,137	
State expenditure State gross debt	21,685	41,441	30,702	18,156	16,884	•
Number of banks .	701 403,300	687 384,200	680 400,000	671 407,500	660	640 \$583,500
Total deposits Number of national						
banks	186	182	182	181	180	179
banks	232,418	229,961	245,391	258,790		
		Table V -	-Agriculture			
	t.		in thousand			
	193 <i>7</i>	1939	1940	1941	1943	1945
Acreage, principal			20.204			
crops Leading agricultur-	21,342	18,685	20,324	22,313		
al crops (bu.).	2 427	7 4 9 0	18,176	24 120	15 540	6,702
Barley Corn	3,427 29,472	7,480 37,220 991	41,028 1,580	26,120 57,224 2,221	1 <i>5,54</i> 0 84,318	72,864
Hay	29,472 1,032 35,376	991 21,173	1,580	2,221 36,428	47,424	17,668
Oats Potatoes	2,156	2,128	43,596 2,548		2,970	1,476 16,632
Sorghums Wheat	2,156 12,330 158,052	11,186 111,657	27,638 123,848	24,055 173,332	2,970 14,500 144,210	16,632 207,961
Whear	150,052	111,007	120,040	., 0,002	144,210	20,,,0.
			Aanufacturi			
	(Money	tigures in t	housands o			
					1937	1939
Wage earners Wages paid			. 31	,481 ,518	34,128 40,513	31,614 36,938
Wages paid Value of products .			. \$457	,675 \$5	43,807	\$464,354
Leading products Meat packing.				1	61,004	143,886
Meat packing Flour and grain .			•		98,995 02,490	69,859 89,438
Petroleum refining Butter		· · · · ·	:		24,071	21,063
	Tahl	e VII.—Mi	neral Produ	ction		
			usands of d			
	1937	1938	1939	1942	1943	1944
Total value of pro-	\$154,376					
Leading mineral	φ134,3/0 3	127,0/3	φ123,3YZ			
products:	88 100	72 100	63 100	117,100	127,400	120,800
Petroleum Natural gas	88,100 30,376	72,100 27,485	63,100 29,356	117,100	122,400	. 20,000

State officers elected in 1942 were: Andrew F. Schoeppel, governor; J. C. Denious, lieutenant governor; Frank J. Ryan, secretary of state (ninth term and sixth consecutive term); George Robb, auditor; Walter E. Wilson, treasurer; A. B. Mitchell, attorney general; George L. Mc-Clenny, superintendent of public instruction; Charles F. Hobbs, commissioner of insurance (eighth term). Arthur Capper was elected U.S. senator for the fifth term. The legislative council approved 31 measures for submission to the 1943 legislature and completed the school and tax codes and prepared bills for them. The tri-state compact was vetoed by President Roosevelt, and a new com-

Natural gas

Cement . .

5,483 5,612 4,763 2,759 1,889

pact was negotiated. Wartime industrial development in agricultural Kansas was probably the most remarkable aspect of the year 1942, the state ranking third after California and New York in aircraft production. Several air training centres were assigned to the state.

The 1943 legislature passed little important legislation but enacted a number of laws growing out of war requirements. A new version of the Republican river compact with Nebraska and Colorado was signed Dec. 31, 1942, and ratified by the legislature. The long-standing problem of taxing transient cattle from the southwest, fattening in the Bluestem pastures, was given a new adjustment by offering reciprocity treatment and tax levies proportional to the time spent in the state.

In the elections of 1944 there was a Republican landslide. In the presidential election the Republican vote was 442,096; the Democratic 287,458; Socialist 1,613; Prohibition 2,609. For state offices, the Republican ticket was elected by large majorities: A. F. Schoeppel, governor; J. C. Denious, lieutenant governor; F. J. Ryan, secretary of state; George Robb, auditor; W. E. Wilson, treasurer; A. B. Mitchell, attorney general; L. W. Brooks, superintendent of public instruction. The legislative council reported 25 bills to the legislature which convened in Jan. 1945, the most important of which dealt with school legislation, a reorganization of the state department of education, an elementary school bill proposing a comprehensive reorganization of the district system and a new plan of elementary school support, including a two mill county-wide tax levy, the county and state aid funds to be used to equalize tax burdens; and a high school finance bill, also looking to equalization.

The election of Nov. 1946 resulted in a Republican landslide in Kansas. Frank Carlson was elected governor; F. L. Hagaman, lieutenant governor; F. L. Ryan, secretary of state; George Robb, auditor; R. T. Fadely, treasurer; E. F. Arn, attorney general; L. W. Brooks, superintendent of public instruction. Only Ryan, Robb and Brooks had formerly held the same office. Only 18 Democrats were elected to the lower house of 125 members, and there was one Democrat in the senate, elected in 1944, which held over. Principal interest in the campaign centred in the contest for the governorship, in which Harry H. Woodring, former governor, and former secretary of war in the F. D. Roosevelt administration, was the Democratic opponent of Carlson. The official figures gave Carlson 309,036 votes, and Woodring 254,283. Main issues of the campaign were the Republican record on liquor, social security and school reorganization. (J. C. Mn.; X.)

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Kazakh S.S.R.

14.524

4,454 9,350

4,357 1,503

12,300

11,433

4,198 1,382

3,809

See Union of Soviet Socialist Republics.

Keitel, Wilhelm

Keitel (1882–1946), German army officer, was born Sept. 22, 1882, at Gandersheim, Germany, near Brunswick. Entering the army in 1901, he was an artillery captain and later general staff officer during World War I, and continued in the Reich war ministry after the armistice. Known as a "political" general, Keitel ranked high in Hitler's estima-

tion and in Feb. 1938, succeeded Werner von Blomberg as chief of staff. He thus directed all major operations (under Hitler's guidance) from the Polish victory in 1939 to the final German defeat in 1945. Keitel, who headed the German delegation which signed the unconditional surrender terms in Berlin, May 8, 1945, was later arrested and held for trial as a war criminal.

At the Nuernberg trial, the prosecution produced documentary evidence showing that Keitel had approved nazi plans for seizure of Czechoslovakia, Poland, Norway, the Netherlands, Belgium and France. Although he protested against the invasion of the U.S.S.R. on strategical grounds, he finally endorsed the attack. It was also proved that Keitel had ordered the army to carry out Goering's economic directives for "exploitation" of soviet territory, food and raw materials. Found guilty of crimes against the peace, war crimes, crimes against humanity and of conspiracy to commit these crimes, he was hanged on Oct. 16, 1946.

Kennedy, Joseph Patrick

), U.S. financier and ambassador Kennedy (1888to Great Britain from 1938 to 1940, was born Sept. 6, 1888, at Boston. He was graduated from Boston Latin school in 1908 and from Harvard in 1912. In 1914 he was president and board chairman of a Boston bank, and in 1919 manager of an investment banking branch. In 1929 he was president and board chairman of Film Booking Offices of America, of Keith, Albee, Orpheum Theatres Corp., and of Pathé Exchange, Inc. In 1934 he was elected chairman of the new Securities and Exchange commission. He resigned in 1935 but returned to Washington in 1937 at the request of Pres. Roosevelt to organize the U.S. Maritime commission. On Jan. 7, 1938, Roosevelt appointed him ambassador to Great Britain. After his resignation Dec. 1, 1940, he urged aid to England and a large armament program for the United States. In 1945-46 Kennedy made investments in New York and Chicago real estate, including purchase of Chicago's Merchandise Mart.

Kenney, George Churchill

Kenney (1889-), U.S. army officer, was born Aug. 6, 1889, in Yarmouth, Nova Scotia, of U.S. parentage. He attended the Massachusetts Institute of Technology from 1907 to 1911 and later worked as a civil engineer. In June 1917 he enlisted as a flying cadet in the aviation section of the U.S. signal corps reserve. He saw active duty in France, was awarded the D.S.C. for extraordinary heroism, and held the rank of captain at the end of the war. In Jan. 1941 Kenney was promoted to the rank of brigadier general, and in Feb. 1942, major general. Transferred to the Southwest Pacific in Sept. 1942, he was placed in command of Allied air forces under Gen. Douglas Mac-Arthur and was named lieutenant general. Kenney was credited by the war department with the origin of the accurate skip bombing technique and with the invention of the fragmentation bomb dropped by parachute. In June 1944 he was named head of the newly-created far eastern air force. This command combined the 5th air force, which operated in Australia and New Guinea, with the 13th air force, which fought in the Solomon Islands, New Britain and New Ireland. Kenney participated in the Philippines campaign of 1944-45 and directed tactical air attacks on Japanese targets in the broad Pacific war theatre. He was named to the temporary rank of full general in March 1945. After the defeat of Japan, Allied headquarters in Manila revealed that Kenney's air forces

had destroyed 11,900 planes and had sunk more than 1,700,000 tons of Japanese shipping in the long Pacific campaign. In March 1946 Gen. Kenney was named head of the Allied air force strategic command.

Kenny Treatment

See Infantile Paralysis.

Kent, Duke of

The Duke of Kent (Prince George Edward Alexander Edmund) (1902-1942), youngest brother of King George VI of England, was born Dec. 20, 1902. He was trained at the Royal Naval college at Osborne and served eight years at sea, first as a midshipman then as a lieutenant, but left the service in 1929 because of his health. With his brother, Edward, then prince of Wales, he made a 15,000-mi. goodwill tour of Canada in 1927 and an 18,000-mi. journey through South America in 1931. Alone, he toured South Africa. While travelling in Europe in 1934, he met Princess Marina of Greece, and their engagement was announced in August of that year. Their marriage took place on Nov. 29, 1934, and for this occasion the title of duke of Kent was revived and bestowed upon him. The couple had three children: Prince Edward George Nicholas Patrick (who succeeded to his title), born Oct. 9, 1935; Princess Alexandra Helen Elizabeth Olga Christabel, born Dec. 25, 1936; and Prince Michael George Charles Franklin, born July 4, 1942, who was given the name Franklin in honour of President Franklin Delano Roosevelt. In Oct. 1938, the duke was named to succeed Lord Gowrie, governor general of Australia, but the outbreak of World War II prevented his assuming the post (which later passed to his brother, the duke of Gloucester). In July 1941, he inspected Canadian training schools and visited President Roosevelt at Hyde Park. The duke, who was an air commodore on the staff of the inspector general of the R.A.F., was killed in active service when his flying boat, bound for Iceland, crashed in North Scotland on Aug. 25, 1942.

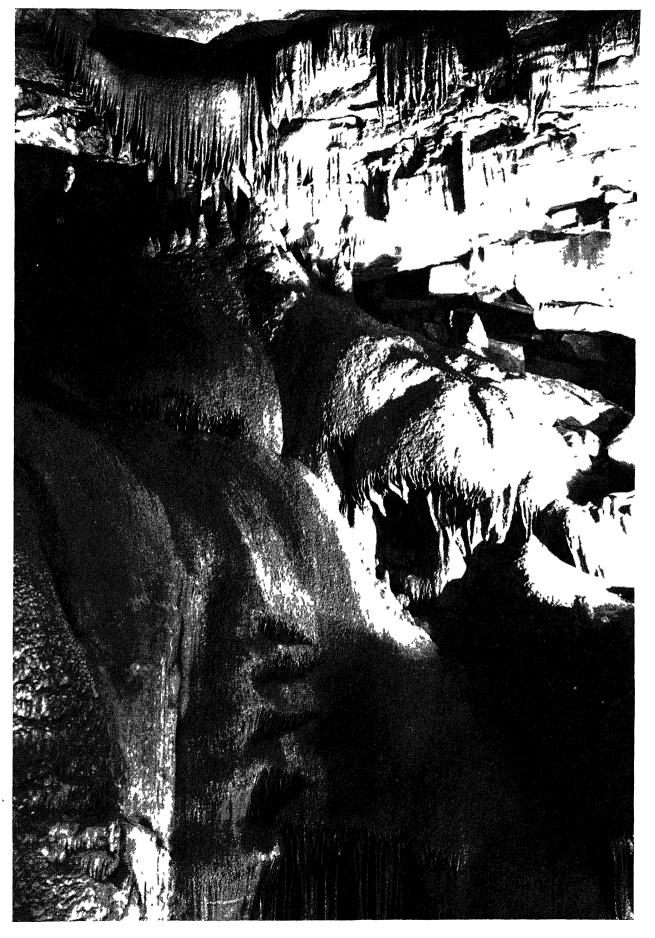
Kentucky

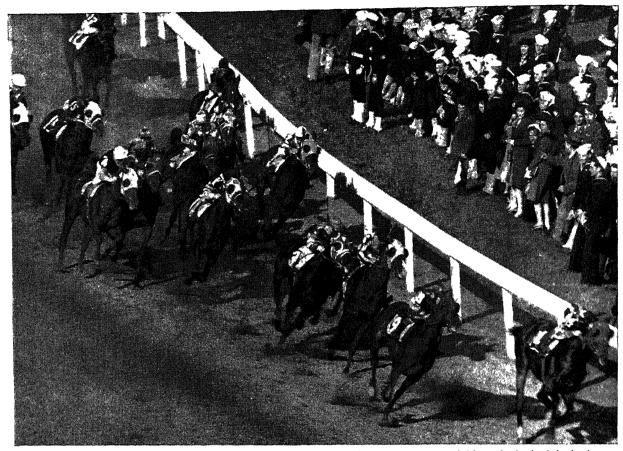
An east south central state of the United States, Kentucky was admitted to the union June 1, 1792, popularly known as the "Blue Grass state." Area, 40,395 sq.mi. (286 sq.mi. water), population (1940) 2,845,627, of which 1,996,300 or 70.2% was rural and 849,327 or 29.8% urban. Negroes constituted 214,031 or 7.5%; and 15,631 were of foreign birth. Population as of July 1, 1944, was estimated at 2,630,194. Capital, Frankfort (11,492); largest city, Louisville (319,077). Other cities: Covington (62,018); Lexington (49,304); Owensboro (30,245); Paducah (33,765); Ashland (29,537).

Principal state officers at the beginning of 1937 were Albert B. Chandler, governor; Keen Johnson, lieutenant governor; H. M. Meredith, attorney general; H. W. Peters, education; G. K. Ferguson, agriculture. The Reorganization act of 1936 had consolidated scores of administrative boards under three groups: constitutional (seven), statutory (ten) and independent agencies (five). Under the last was a legislative council to prepare legislation for the biennial meetings of the general assembly. An Ohio river flood in Jan. 1937 cost the lives of 50 persons and caused property damage of \$139,800,000 in 54 counties. Severe losses occurred in Covington, California, Louisville and Paducah.

The general assembly met in Jan. 1938 in regular ses-

Mammoth cave in central Kentucky was formally dedicated as a national park on Sept. 18, 1946. This is a detail of the interior showing picturesque stalactites





sion, and in two special sessions immediately thereafter. Legislation enacted totalled 1,100 pages, much of which extended and amplified the Acts of 1936 along the lines of the national program of social and economic welfare. The assembly also passed an Alcoholic Beverage Control act, made new rules for several professions, set up a teacher's retirement plan and fixed a minimum wage rate of 25 cents per hour. In Nov. 1938 the electors returned eight Democrats and one Republican to the lower house of congress, and gave Sen. Alben W. Barkley, administration leader, a majority of 134,469 votes over his opponent, John P. Haswell.

On Oct. 9, 1939, Gov. Chandler resigned his office to fill the unexpired term of Sen. W. M. Logan, deceased. Lt. Gov. Johnson, who succeeded him, was nominated in the August primary, and elected in November by 460,834 to 354,704 votes over his opponent, King Swope (Rep.). Other state officers, also Democratic, were R. K. Myers, lieutenant governor; H. Meredith, attorney general; J. W. Brooker, education; W. H. May, agriculture. The general assembly was also strongly Democratic: 28 of 38 votes in the senate and 72 of 100 votes in the house. The legislative council prepared a number of measures pertaining to increased payments for the aged poor, unemployed, the teacher's retirement fund and budgetary problems.

Efforts of the United Mine workers to secure a new contract in the Appalachian field in April 1939 assumed national importance. The Operators' association of Harlan county resisted demands by John L. Lewis, who denounced Gov. Chandler as an enemy of labour. In reply the governor sent troops on May 10 to maintain order, increasing the force as union agitators became active. The U.S. courts indicted 52 coal companies for conspiracy. In Aug. 1939 peace was imperilled by a clash in Bell county,

Pensive (number 5, at extreme left) ran far back of the leaders on the first turn of the Kentucky Derby, May 6, 1944, but came from behind to win the \$64,675 purse

but only one death could be directly attributed to some five months of military occupation. The operators finally signed varying contracts, and on Oct. 3 the courts dismissed the cases against the companies.

Kentuc	ky: Stati	stical Data	,		
Table I	.—Educai	ion (Public	}		
1936	1938	1940	1942	1943	1945
High schools	713 526,807 91,511 13,250 4,308	683 460,953 131,546 13,694 5,958	716 498,599 139,910 5,988	697 561,844 133,657	445,678 82,212
Table	II.—Publi	c Welfare			
(Money figur					
	37 193		•	1941	1945
Number of cases on general	,.	,•			. ,
relief	19 \$ 44,4	48 \$	42 \$4	3 \$44 34 <i>57</i> ,806	48,190
aid	8	23	99	5 1,350	
Workers under unemployment compensation	265,9	86 244,7	50 253,30		
Table	III — Com	munication	_		
(Money figur					
1937	1938	1939	1940	1943	1944
Highway mileage	9,402	9,694		10.000	
Expenditure on	\$24,830	\$25,117	\$25,71	•	7,070
Kamoda mileage 3,728	3,/13	3,691			
Table IV.	.—Bankin	g and Fina	nce		
(Money figure	es in that	sands of d	oliars)		
1937 1	938	1939	1940	1944	1945
State expenditure \$47,593 \$5 Number of banks 437 Total bank deposits \$444,600 \$43 Number of national	1,130 ± 428	\$68,086 \$41,505 414 463,800	409 \$482,900	\$31,330 \$32,465	
banks 99 Deposits of national		95	95		
banks \$239,426 \$92	20,097 \$	266,208	\$290,579		

	Kentuck	y: Statistico	l Data (cor	ntinued)		
		Table V.—.	Agriculture			
	(.	All figures i	n thousand:	s)		
	1937	1939	1941	1943	1944	1945
Leading agricultural crops (bv.):						
Corn	75,556	70,400	73,400	75,350	67,080	
Hay	1,463	1,582	1,591	2,172	1,623	
Tobacco (lb.) Wheat	364,945	346,138	285,240	328,811	398,195	
Oats	10,212 1,848	4,071 952	5,625 1,722	3,002 1,760	7,902 1,538	5,278 1,925
Barley	910	1,122	2,825	1,700	1,556	1,725
Potatoes	4,371	3,864	3,901	4,664	2,494	3,999
	To	ıble VI.— <i>N</i>	lanufacturin	ıg		
	(Money	figures in t	housands o	f dollars)		
	···-	•	1935	•	937	1939
Wage earners			60,80	D9 6	2,794	68,998
Wages paid			\$53,03	58 \$6	6,249	\$61,902
Value of products .			\$450,67		4,897	\$481,030
	Tabl	e VII.—Min	eral Produc	tion		
	(All fig	ures in thou	sands of d	ollars)		
	, ···		1937		938	1939
Total value of produc Leading mineral prod			\$127,42	4 \$10	6,655	\$113,243
			86,63		0,094	74,481
Natural gas			22,90	4 1	9,539	20,630
Petroleum			7,68		7,570	5,900
Stone			3,04		2,987	4,480
Fluorspar			1,71		678	1,773
Clay			2,41	4	1,933	2,571

In the presidential election Nov. 5, 1940, Roosevelt electors carried the state with 557,222 votes to 410,384 for the Republicans. The Prohibition vote was 1,440; the Socialist, 1,014. Sen. Chandler defeated W. B. Smith (Rep.) by 561,151 votes to 401,812, for the U.S. senate. A Republican, John M. Robsion, was elected in the 9th districteight other districts electing Democrats to congress. The general assembly of 1940 approved a legislative program which supplemented and co-ordinated many national objectives, such as housing projects, rural credits and conservation plans, adjusting them to local conditions. The first soil conservation district to stop erosion and retire marginal tracts from cultivation was created in Logan county. Other boards were appointed to investigate farm tenancy, supervise distribution of surplus U.S. food commodities and certify WPA workers and CCC boys to their respective officers. Considerations of public health and safety doubtless required the passage of a law prohibiting ophiolatrous practices in any religious service or gathering.

In the November election of 1941 the voters returned a general assembly overwhelmingly Democratic: 75 Democrats in the lower house of 100 members, 29 in the senate of 38 members. Two constitutional amendments were adopted, the first providing that the general assembly "may by general law distribute not to exceed 10% of the school fund on other than a census-pupil basis." The second authorized any county to use voting machines at its own expense.

In 1942 the regular session of the general assembly increased the penalties for prostitution; granted more leniency in paroling convicts during the war period; voted a war emergency fund of \$500,000 for the governor's use; and reduced state holidays to three: July 4, Labor day, Christmas. At the special session (March 10 to April 8) the various legislative districts were rearranged, both state and federal. In the election of Nov. 3, 1942, all the congressmen were re-elected. Sen. Chandler won by 216,958 votes to 175,081 for his opponent, R. J. Colbert.

Simeon S. Willis (Rep.) was elected governor in the 1943 state election. The Republicans also elected Kenneth H. Tuggle, lieutenant governor; Eldon S. Dummit, attorney general; Irvin Ross, auditor; Thomas W. Vinson, treasurer; John Fred Williams, state superintendent of public instruction: Elliott Robertson, commissioner of agriculture. The Democrats elected the secretary of state, Charles K.

O'Connell, and the general assembly remained Democratic in both branches. In a special congressional election Chester O. Carrier (Rep.) defeated J. Dan Talbot (Dem.) in the fourth district. Amendments to the state constitution which would extend workmen's compensation and raise limitations on salaries were rejected.

In the presidential election of Nov. 1944, Pres. Roosevelt's plurality was 80,141. The Democrats also returned Sen. A. W. Barkley and eight congressmen. In the 9th district, however, the Republicans returned John M. Robsion. Under the statute of 1942 absentee ballots were used for the first time, resulting in a service vote of 31,672, and civilian votes numbering 7,046. The legislature's regular session and a special session, May 19 to June 12, failed to come to terms on the governor's budget bill, but a second extra session, from June 12 to 16, completed the budget, including \$5,300,000 for tuberculosis sanatoriums.

In the election of Nov. 6, 1945, the Democrats carried the general assembly, winning by 71 to 29 over the Republicans in the house and 21 to 17 in the senate. Two constitutional amendments were adopted, the first continuing the absentee ballot system first adopted by the general assembly in 1942. The second amendment provided that all funds obtained for the benefit of public roads be devoted exclusively to that purpose. On Nov. 19 Gov. Willis appointed William A. Stanfill U.S. senator to fill the vacancy caused by Sen. A. B. Chandler's resignation.

In the election of Nov. 5, 1946, John Sherman Cooper (Rep.) was elected U.S. senator for two years over John Y. Brown (Dem.) by 41,823 votes. The Republicans also elected congressmen in the third, seventh and ninth districts. The general assembly of 1946 passed 248 acts. It adopted a motor responsibility act for all accidents involving damage of more than \$50. (E. T.; X.)

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Kenya

See British East Africa.

Kerr, Sir Archibald Clark See Inverchapel, 1st Baron.

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Kesselring, Albert

Kesselring (1887-), German army officer, began his career as an aviator in World War I. His friendship with Reichsmarshal Hermann Goering aided his rise, and in 1936 he was appointed first chief of the luftwaffe's general staff. He later resigned when his technique of air operations met with disapproval. The shake-up in the German high command in Feb. 1939 brought Kesselring back to favour, however, and he directed air operations in the Polish campaign of 1939 and the attacks upon the Netherlands, Belgium and France in 1940. Kesselring was then promoted by Hitler to the rank of general field marshal. He commanded a German aviation unit on the U.S.S.R. front in 1941-42, and was appointed chief of the luftwaffe in Italy in Feb. 1942. In Sept. 1943 Kesselring was placed in command of the central Italian front, and he assumed over-all command of the wehrmacht in Italy after Rommel's departure for the western front. In May 1945, Kesselring was captured by troops of the U.S. 7th army. He was then indicted by the Allies as a major war criminal.

800 Kidnapping

Unusual kidnap cases of the years 1937-46 included a number with international features. Palestine, Mexico and China provided the sites for practically all of these.

In 1939 the Rev. J. H. Goldner and his son Rev. G. R. Goldner, U.S. missionaries, were kidnapped by Arab bandits. Upon payment of the demanded ransom, they were released. In 1940 R. Bullen was abducted by robbers in Jerusalem. In 1941 there were wholesale seizures of Jewish leaders by Arab nationalists acting, it was said, in response to mass arrival of Jewish immigrants from the Balkans.

Many of the major kidnappings in China during the decade also had a distinctly international character. One that attracted especial attention involved Frank Poletti, Italian postal commissioner, who was kidnapped in Peiping early in 1939. The Italian embassy provided ransom, whereupon Commissioner Poletti was released. Not long thereafter, H. F. Dyott, chairman of the British Chamber of Commerce in Tientsin was seized by bandas and held for ransom, while in 1941 Mrs. Denzil Clark, Japanese-born wife of a British embassy press attaché, was seized by Japanese extremists but was later released through official intervention.

Mexican cases with international features included the seizure of J. W. Reid by bandits in Mexico City in 1940, and the announcement of the U.S. Federal Bureau of Investigation (qv.) in 1939 that with the arrest of five Japanese and one Mexican in Los Angeles, who were charged with the kidnapping of O. Lampe at Guanajuato, Mexico, an international kidnap ring had been broken.

Other cases of international interest were the direct outgrowth of World War II. Especially notable was that involving the Austrian nazi, Arthur Seyss-Inquart, who later died on the international tribunal's gallows at Nuernberg. Gauleiter Seyss-Inquart's daughter was seized and held as a hostage by Netherlands patriots in 1943. In the same year there was a Japanese attempt to kidnap the British consul at Macao. The following year was also featured by what was probably a political kidnapping in occupied Denmark when K. Munk was abducted and slain in the Silkeborg area.

Largest scale kidnappings were those attributed to nazi policy of mass seizures of children of various nationalities. In 1946 the United Nations Relief and Rehabilitation administration announced that existence of a systematic German policy of kidnapping, involving children in occupied countries had been established as a result of its European investigations during the postwar period.

War also had its influence upon kidnappings in other lands. In common with other crimes, ransom kidnappings everywhere tended to decline during the war years; but with the return of peace and the demobilization of armies throughout the world there were many signs of a return to the former levels. Also returning to the criminal dockets were the activities of the Mafia, which had been vigorously suppressed in Sicily by Mussolini's police state.

During the ten-year period there were almost 200 kidnappings in the United States, although ransom was demanded in less than a score. In the others the abductions preceded auto thefts, burglaries, robberies and murders, but with these primary objectives attained the victims of kidnapping were usually released without great harm.

In four U.S. kidnappings, however, children of tender years were killed by their abductors, and the resulting search aroused a public interest so extraordinary as to be reminiscent of the Lindbergh case of the early 1930s. In

two of these cases of outstanding popular interest, no ar rests had been made or convictions secured by the end of 1945; but they constituted the only unsolved kidnap cases, out of some 300, handled by the FBI after that agency acquired jurisdiction in June 1932.

Dawn of the ten-year period found police searching for ten-year-old Fletcher Mattson, son of a Tacoma, Wash., physician, who had been kidnapped in Dec., 1936. A few weeks later the boy's battered and lifeless body was found, but although the search for his abductor was unremittingly pressed, the ten years yielded no conclusive evidence of guilt. A somewhat similar case arose in the very next year in New Rochelle, N.Y., where 12 year old Peter D. Levine, was kidnapped. His body was later recovered, but the persons responsible were still being sought at the end of 1946.

These two fatal cases in themselves aroused more than the usual amount of popular concern, but the fact that no final disposition had been made of them after so long a period lent them a special importance in the annals of kidnapping investigations.

Equally revolting in their criminal features were two other kidnappings which had fatal consequences for the victims but were accompanied by more successful investigative results:

In 1938, five-year-old James Bailey Cash was taken from his bed in his parents' home in Princeton, Fla., and held for \$10,000 ransom. After an intensive investigation by the FBI, F. P. McColl, aged 21, a resident of the same town was apprehended and charged. He promptly confessed the crime. The ransom which had been paid over to McColl was recovered, as was the kidnap victim's lifeless body. McColl received the death penalty.

Just as the beginning of the ten-year period had been featured by a kidnapping of unusual ferocity, its final year produced a somewhat similar crime. When Suzanne Degnan, aged six, was kidnapped from her parents' home on the north side of Chicago in Jan. 1946, there was some idle speculation that the crime might have been an act of retaliation against her father, who was employed in the federal Office of Price Administration. All hope that the case might be quickly and easily solved vanished, however, when parts of the child's dismembered body were recovered in the immediate neighbourhood of the kidnapping This brought suspicion to bear upon various persons who, police said, could not give a ready explanation of their actions on the date in question, and led to premature declarations by Chicago police that a solution was only a matter of hours. But the promised definite action was not forthcoming, and it was not until June 1946 that William Heirens, a student at the University of Chicago, who had been arrested for burglary, was tentatively connected with the crime. First there was a suggested similarity between Heirens' fingerprints and those found on the ransom note, later there were indications of a similarity between Heirens' handwriting and a message written on a wall at the scene of an earlier murder. Slowly the evidential fragments were pieced together. After considerable manoeuvrings Heirens confessed, but sought to avoid criminal responsibility. He was sentenced to life imprisonment.

Probably the best example of a kidnap solution through public participation was that of three-year-old Marc de Tristan, who was taken from the custody of his nurse in Hillsboro, Calif., in 1940. Ransom of \$100,000 was demanded. The kidnapper was later seized by two lumbermen who acted solely on the basis of published descriptions. The victim was found unharmed.

Other kidnappings in various parts of the world in

cluded numerous cases in Shanghai in 1940 and 1941, culminating in the abduction of nine employees of the Central Bank of China. In 1937 Eugenio Pereyra Iraola, two-year-old son of an Argentine cattle rancher, was seized by a kidnapper who later confessed the crime and committed suicide. At least a trace of European politics seemed to be involved in the abduction of I. Haugen, a Norwegian resident of Brooklyn, in New York city; he declared in 1940 that he had been kidnapped by "nazi sympathizers." In 1942 Latin America again was featured when Cesar Rodriguez was wounded and his nephew Evenicio Hurriz was killed, while fighting off three kidnappers. Maximo Del Llana was arrested and held for the crime.

Even Canada found a place in kidnap history during these extraordinary years. In 1937 seven Canadians were released after pleading guilty to seizing their employer and transporting him to the United States border, while in 1943 W. P. Forshee, branch manager of the Royal Bank of Canada at Wheatley, Ont., was forced to leave his home and to open the bank vaults. The six bandits involved in this burglary-kidnapping made good their escape after looting the bank.

Reminiscent of the Lindbergh case in the manner in which ransom money was employed to trace a kidnapper, was the solution of the Ross case. Charles S. Ross (whose name served to recall that of another kidnap victim of several generations earlier) was a Chicago merchant. Four months after Ross was kidnapped in Sept. 1937, John Seadlund was seized at far-off Santa Anita race track in the act of betting money identified as having been paid by the family of Ross in a vain effort to effect his release. Seadlund confessed that he had killed both Ross and his own confederate in the kidnapping, but this unfortunate end to an otherwise successful investigation did not obscure the

Chicago police studying "hidden writing" on a ransom note written by William Heirens, later convicted for the kidnapping and slaying of a 6-year old child in Jan. 1946 skill and persistence of the FBI in handling this and other cases.

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Kimmel, Husband Edward

), U.S. naval officer, was born at Kimmel (1882-Henderson, Ky., on Feb. 26, 1882. He was graduated from the U.S. naval academy in 1904. By 1937 he had risen to the rank of rear admiral; on Feb. 1, 1941, he was made commander in chief of the Pacific fleet and promoted to admiral. On Dec. 17, 1941, ten days after the Japanese attack on Pearl Harbor, Kimmel was relieved of his command. In Jan. 1942, the report of a special investigating commission headed by supreme court Associate Justice Owen J. Roberts placed blame for the Pearl Harbor disaster on Kimmel and Lt. Gen. Walter C. Short (q.v.). Kimmel's application for retirement was granted in Feb. 1942. On July 20, 1946, a joint congressional investigating committee in its majority report said Kimmel's errors were those of judgment and not dereliction of duty.

King, Ernest Joseph

King (1878—), U.S. naval officer, was born Nov. 23, 1878, in Lorain, O. He left Annapolis to serve in the Spanish-American War, returning to the naval academy to graduate in 1901. During World War I he was assistant to the chief of staff of the commander in chief of the U.S fleet. Promoted to the rank of rear admiral in 1933, he served as chief of the bureau of aeronautics until 1935. In 1938 he was named vice admiral and was placed in command of the fleet's aircraft battle force. He was appointed commander of the Atlantic fleet on Feb 1, 1941.



During the shake-up of commands following the attack at Pearl Harbor, King replaced Husband E. Kimmel as chief of the U.S. fleet, including all U.S. naval operating forces in Atlantic, Pacific and Asiatic waters. He was later also appointed chief of naval operations. In 1943 and 1944 King participated in several military and naval conferences dealing with British-U.S. war strategy. His planning was credited with the destruction of Japan's naval power in 1944 and 1945. On Dec. 14, 1944, he was promoted to the newly created rank of fleet admiral, along with Chester W. Nimitz and William D. Leahy. King was succeeded by Nimitz as commander of the fleet and chief of naval operations in Nov. 1945. Named to the National Defense council in March 1946, he was awarded the permanent rank of admiral.

King, William Lyon Mackenzie

King (1874-), Canadian politician, was born at Berlin (Kitchener), Ont., Dec. 17, 1874. His grandfather, William Lyon Mackenzie, had been prominent in the struggle for political freedom in 1837. King entered parliament in 1908, became leader of the Federal Liberal party in 1919, and was returned to office as prime minister for the third time on Oct. 23, 1935. Following Canada's entry into World War II, the King government came under attack of his political foes. The growing controversy over the question of conscription for overseas duty reached a crisis in 1944; King's proposal on Nov. 23 to send overseas 16,000 of the 42,000 "home service" draftees, under authority of the National Resources Mobilization act, precipitated a storm of protest, particularly in the Frenchspeaking province of Quebec. After several weeks of violent debate, however, the house on Dec. 8, 1944, voted 143 to 70 to "aid the government in maintaining a vigorous

King co-operated with the United States in measures for common defense of the two countries, and he participated in several Churchill-Roosevelt conferences. In the general elections held June 11, 1945, King's Liberal party emerged victorious although it failed by a slim margin to obtain a clear majority. King himself was defeated in his constituency in Prince Albert, Sask., but was re-elected in a parliamentary by-election in Ontario, Aug. 6. He participated with Truman and Attlee in the Washington conference on atomic energy, Nov. 15, 1945. On Feb. 15, 1946, King announced that 22 persons, including some members of the U.S.S.R. embassy staff in Ottawa were being held for questioning on espionage activities. Russia admitted its military attaché in Canada had obtained information, but denounced King's government for publicizing the investigation before consulting Moscow. On March 18 King told commons that Canada had been used by Russia as a base to obtain information on the atomic bomb, but he rejected talk of a diplomatic rupture between Canada and the soviet union.

Kingman Island

See PACIFIC ISLANDS, U.S.

Kinkaid, Thomas Cassin

Kinkaid (1888—), U.S. naval officer, was born April 3, 1888, at Hanover, N.H., and was graduated from the U.S. naval academy at Annapolis, Md., in 1908. In World War I, he served with the British admiralty, and later became gunnery officer of the U.S.S. "Arizona." He played an important part in 1942 in both the battle of the Coral sea

and the battle of the Solomon Islands. The following year he was named commander of the naval force in the North Pacific, with direction of joint military operations in that area. In this capacity Kinkaid engineered the unopposed landing of U.S. forces on Kiska Island in the Aleutians in Aug. 1943. He was promoted to the rank of vice-admiral in June 1943, and in November of the same year became commander of the 7th fleet. In April and May, 1944, he supported Allied landings at Biak Island and at Hollandia in New Guinea. In the battle for Leyte gulf, in October, his fleet knocked out two Japanese navy forces. The 7th fleet covered U.S. ground forces invading Luzon (Jan. 9, 1945). In March 1945 Kinkaid was promoted to the rank of a full admiral. In November he was succeeded as commander of the 7th fleet by Vice-Adm. Daniel E. Barbey, and on Jan. 19, 1946, Kinkaid formally took over command of the 16th fleet and the eastern and Gulf sea frontiers.

Kirghiz S.S.R.

See Union of Soviet Socialist Republics.

Kirk, Alan Goodrich

), U.S. naval officer, was born in Phila-Kirk (1888delphia, Pa., Oct. 30, 1888. He was graduated from the U.S. naval academy at Annapolis in 1909. He was on the gunboat U.S.S. "Wilmington" at Canton, China, during the Sun Yat-sen revolution. In 1916 he was assigned to the naval proving ground at Indian Head, Md., and served there as proof and experimental officer throughout World War I. Kirk served as U.S. naval attaché and naval attaché for air in the U.S. embassy in London during 1939-41. He became director of U.S. naval intelligence in 1941. He led a task force into Sicily in Aug. 1943, landing a division of soldiers and their supplies under almost continual axis bombing and retiring without loss of a ship. In Feb. 1944, he was appointed commander of the U.S. naval task force in England and first chief of staff to Adm. Harold R. Stark. He also commanded one of the task forces in the invasion of France. In Oct. 1944 he was named commander of U.S. naval forces in France. On Jan. 21, 1946. Kirk was appointed by Pres. Truman as ambassador to Belgium and minister to Luxembourg.

Kiska

See WORLD WAR II.

Kiwanis International

See Societies and Associations.

Kleffens, Eelco Nicolaas van

Van Kleffens (1894—), Netherlands statesman, was born Nov. 17, 1894, in Heerenveen, the Netherlands. Graduated from Leyden university in 1918, he joined the toreign service and was a member of the League of Nations secretariat, 1919–21. In 1923 he was attached to the Netherlands foreign ministry and was chief of the diplomatic section from 1929 to 1939. After the fall of the Netherlands in May 1940, he fled to England, where he became foreign minister for the Netherlands government-in-exile.

In 1944 he voiced his concern over the Big Three's assumption that machinery for postwar security would be dominated by the four or five largest powers. He maintained this view at the sessions of the United Nations in San Francisco in 1945 and the first London sessions in early 1946 and the New York sessions. During the London sessions of the U.N. Security council, the Netherlands foreign minister clashed with Andrei Y. Vishinsky over the

latter's demand (Feb. 10, 1946) for an investigation of the Indonesian dispute. On Feb. 26, 1946, Van Kleffens was named the permanent Netherlands representative to the U.N. Security council.

Kleist, Paul Ludwig von

), German army officer, was born on Kleist (1881-Aug. 8, 1881, in Braunfels, Prussia. Descendant of an old Junker family, he served as a lieutenant of hussars and regimental commander in World War I. After the Armistice he was a cavalry instructor in Hanover, but Hitler lifted him from the obscurity of the classroom to command of an army corps. Kleist participated in successful operations in Poland in 1939 and in France in 1940, and led the mechanized column that took Belgrade in the Yugoslav campaign of 1941. Early in the Russian campaign, his tank army led the attack on Kiev and the advance through the Ukraine. Kleist's armies also captured Dniepropetrovsk in Aug. 1941, but this proved a pyrrhic victory, since the Russians had destroyed the famous dam there before retiring. In Nov. 1941 they captured Rostov, only to lose it a week later when Gen. Timoshenko launched a counteroffensive.

When the nazis renewed their offensive in the summer of 1942, Kleist's 1st German tank army drove through to the foothills of the Caucasus. The following year the Russians succeeded in driving the Germans back, and in April 1944 it was reported that Kleist had been replaced by Gen. Schoerner. Just prior to the defeat of Germany in May 1945, Kleist was captured by U.S. troops.

Kluge, Guenther von

Kluge (1882-1944), German army officer, was a scion of an old Prussian family. In World War I, he served with the German general staff and was wounded in the battle of the Marne. Continuing his career in the army after the Armistice, he was promoted to major general in 1933, and was chief of staff for Gen. Walther von Brauchitsch in East Prussia.

Three years later, Kluge, now a full general, led German forces that reoccupied the Rhineland.

During World War II, he commanded wehrmacht forces that invaded the Polish Corridor during the Polish campaign in 1939. He was later promoted to field marshal and directed one of the German armies that broke into France in 1940. Transferred to the eastern front in the summer of 1941, he led one of the German armies that surged through the U.S.S.R. only to be stopped at the gates of Moscow in Dec. 1941. The following year, he was in command of wehrmacht forces on the central sector of the soviet front.

After the German failure to prevent the Allied landings in Normandy in 1944, he replaced Runstedt as commander of German armies in the west in July. In October, it was announced that Runstedt had been restored to his old post and in December, the British radio quoted a German high command order dated Aug. 31, 1944, which said that Kluge had committed suicide. New light on the mystery surrounding his death was shed June 11, 1945, in a U.S. press dispatch from Berchtesgaden. Kluge, according to this account, had been involved in the abortive plot to slay Hitler in July 1944. On the day of the attempted assassination, Kluge had allegedly made a secret rendezvous with U.S. 3rd army officers near Avranches, Normandy.

Because the U.S. contingent was delayed in reaching its meeting place, Kluge hurried back to headquarters, where he discovered that the plot had failed. Ordered back to Berlin, Kluge took a fatal dose of poison, rather than face Hitler's vengeance.

Klystron

See Physics.

Knights of Columbus

See Societies and Associations.

Knitwear

See TEXTILE INDUSTRY.

Knowlson, James S.

Knowlson (1883-), U.S. industrialist, was born June 29, 1883, in Chicago. After graduating from Cornell university in 1905 he worked as an electrical engineer in Schenectady until 1909. He was chairman of the board and then president of Stewart-Warner corporation. In Sept. 1941 he was appointed deputy director of the Office of Production Management priorities division as a dollar-ayear man. He was named head of the War Production board division of industrial operations in Jan. 1942, and was charged with the task of speeding the conversion of U.S. factories to war production. When Chairman Donald Nelson realigned the WPB on July 10, 1942, the conversion problem was declared solved, and Knowlson was made vice-chairman on the WPB program determination staff. Two months later Ferdinand Eberstadt succeeded Knowlson in this post; it was then explained that Knowlson needed more time to devote to his increasingly heavy duties on the British-U.S. Combined Production and Resources board, of which he was a member. He was also chairman of the U.S. section of the Canadian-U.S. Joint War Production committee, an agency which had been set up to speed war production of both countries. He retired from the latter post in Dec. 1942, and resigned as WPB vice-chairman in Jan. of the following year. From May to Sept. 1945, Knowlson was in charge of the disposition of surplus U.S. military supplies in Europe. He then returned to the Stewart-Warner corporation as president.

Knox, (William) Franklin

Knox (1874-1944), U.S. publisher and secretary of the navy, was born Jan. 1, 1874, in Boston, Mass. He served with Theodore Roosevelt's Rough Riders in the Spanish-American War, and during World War I served in France as a colonel in the 365th field artillery. In 1931 he became publisher of the Chicago Daily News. Politically a nonconformist, Knox began as a Republican, but broke away from the party in the 1912 election to join the Progressive Republican, or "Bull Moose" party. In 1936 he was Republican candidate for vice-president. Franklin D. Roosevelt named him secretary of the navy June 20, 1940. Knox was branded as a renegade by many G.O.P. leaders for accepting this post, but his answer was that he was "American first and a Republican afterward." After the Pearl Harbor disaster Knox promptly overhauled the navy high command and introduced an immediate program of naval expansion, through which the U.S. fleet became by 1944 the strongest afloat. Knox died in Washington, D.C., April 28, 1944.

Knudsen, William Signius

Knudsen (1879-), U.S. industrialist, was born in Copenhagen, Denmark, on March 25, 1879. At the age of 20 he emigrated to the United States, where he worked in a shipyard and in a railroad shop in New York. After a period as superintendent of a mill in Buffalo, he became associated first with Ford Motor company and then with

Chevrolet Motor company; he was named vice-president of the latter firm in 1922 and later became president. In 1933 he was appointed executive vice-president of General Motors corporation and in 1937 he became president.

On May 28, 1940, Pres. Roosevelt appointed Knudsen commissioner of industrial production for the national defense advisory commission. When the Office of Production Management was created on Jan. 7, 1941, Knudsen was named director general. He continued to be the most important figure in the production phase of national defense until Jan. 1942, but gradually matters of general policy were delegated to other agencies such as the Office of Price Administration and the War Production board. On Jan. 16, 1942, he was appointed production director of the war department and was made a lieutenant general. During the following two years he spent much of his time in the field, visiting and counselling industries and otherwise expediting production. Knudsen then served as director of the Allied air forces material and service command from July 1944 to April 1945, when he returned to the war department. On June 1, 1945, he resigned and returned to General Motors corporation.

Koenig, Joseph-Pierre

), French army officer, was born in Koenig (1900?-Caen, the son of an Alsatian army officer. He fought with the infantry during World War I, and saw action in the Rif campaign from 1924 to 1926. In World War II he participated in the ill-fated Narvik campaign in Norway of April 1940, where he was promoted to the rank of major. During the German invasion of France in May and June 1940, Koenig fought in the Brittany peninsula and was evacuated to England just before the armistice. He and his regiment immediately joined the De Gaullist forces. Koenig achieved renown for his stubborn 15-day stand against attacks by Rommel's panzers at Bir Hacheim in North Africa in May and June 1942. In Aug. 1943 he was made assistant chief of the French army general staff. He became chief liaison officer between Gen. Dwight D. Eisenhower and the French forces of the interior in April 1944, and in June Eisenhower named him commander of all F.F.I. forces in France. Koenig's armies developed into a unified and well-disciplined force of more than 175,000 men. Their forays disrupted German communications and pinned down a large part of the wehrmacht behind Allied lines in France. On Aug. 21, 1944, when F.F.I. troops and the citizenry of Paris staged an uprising against the German occupation troops, De Gaulle named Koenig military governor of the French capital. He occupied this position until July 1945, when he became French representative on the Allied Control council for Germany.

Koiso, Kuniaki

Koiso (1880—), Japanese army officer and statesman, was educated at the Military Staff college, where he later served as instructor. He then acted as chief of the general military aviation headquarters, director of the military preparatory bureau, director of the military affairs bureau, and chief secretary to the Supreme War council. In 1932 he became vice-minister for war and a member of the staff of the Kwantung army in Manchuria. He commanded the 5th Japanese division in 1934 and the Korean army in 1936. Koiso was minister for overseas affairs in 1939 and 1940 in the Hiranuma cabinet and was appointed governor general of Korea in May 1942. In July 1944 he was named premier of Japan, succeeding Gen. Hideki

Tojo, whose resignation followed a series of military setbacks. Koiso was known as a staunch disciple of Japan's "special mission" of aggression and expansion in east Asia. By March 1945 the military position of Japan had become critical and Koiso was forced to ask for sweeping emergency powers to prepare for an eventual Allied invasion. But in April his cabinet was ousted to make way for a more "powerful" regime. Koiso surrendered to Allied occupation forces on Nov. 23, 1945.

Komorowski, Tadeusz

Known also as Gen. Bor, Komorowski (1898-Polish army officer, was born near Lwow, the son of a farmer. As a student member of the underground Polish organization, he was wounded during the uprising against the Germans in Warsaw in Nov. 1918. He joined a Polish cavalry regiment after Poland won its independence, studied military tactics in the École de Guerre in Paris, and in 1926 was promoted to the rank of lieutenant colonel. During the German invasion of Sept. 1939, Komorowski commanded a cavalry brigade. He subsequently joined the Polish underground army, and Gen. Wladyslaw Sikorski appointed him deputy to Gen. Grot, commander in chief of the Polish home army. Grot was arrested in Warsaw in June 1943 and Komorowski became his successor. It was said that he adopted the name "Bor" from the Polish word meaning forest, where his first headquarters were located. On Aug. 1, 1944, when the Red army neared Warsaw, the Polish government in London ordered Komorowski to launch an uprising in the Polish capital. He met with some initial success in the early phases of the revolt, but the promised Russian drive into the city failed to materialize and the Germans crushed the revolt after 63 days of bitter fighting. Komorowski was forced to surrender to the Germans on Oct. 5. After the liberation of Poland and the establishment of the new Polish government, Komorowski was removed as commander in chief of the Polish army. Going into exile, he became a bitter opponent of the Russian-sponsored government of Poland. In May and June 1946 he travelled to the United States, where he was feted by Polish-American societies in Chicago and New York.

Konev, Ivan Stepanovich

Konev (1897?—), Russian army officer, came of peasant stock and joined the Red army as a youth. At the age of 20 he, with his wife, organized guerrillas in the far east, fought against the Kolchak (White Russian) army and subsequently commanded an armoured train against the Japanese. In 1921 he participated in the attack that subdued the Kronstadt naval rebellion. He was an important political figure as well; from 1931 to 1934 he was a member of the All-Union Central Executive committee, and in 1939 he became an alternate member of the Central committee of the Communist party.

Konev was soviet commander in the west when Germany attacked the U.S.S.R. in 1941, and led the first real counterattack of the war. He was withdrawn to form what became the northwest front army, which went into action with the opening of the Moscow counteroffensive in Dec. 1941. In the critical summer of 1942 Konev led a six-week operation against Rzhev, tying down large German forces which might otherwise have been sent to assist the 6th German army at Stalingrad. Konev was one of the generals under whose direction the Russian armies in 1943 broke Germany's third summer offensive. In Aug. 1944 his army crossed the Vistula river, south of Warsaw, penetrating the last German stronghold before Germany proper. He was

awarded the Order of Suvorov in 1943 and in March 1944 was promoted to the rank of marshal of the soviet union. Konev's 1st army was in the forefront of the great Russian drive launched from Poland in mid-Jan. 1945; his forces, together with Marshal Zhukov's, entered and captured Berlin. After Germany's surrender Konev was made commander of Russian occupation forces in Austria.

Konoye, Fumimaro

Prince Konoye (1891-1945), Japanese statesman, was born at Kyoto in Oct. 1891, son of Prince Atsumaro Konoye and descendant of one of Japan's oldest families. He was graduated from Tokyo Imperial university's law college in 1917, and was a member of Prince Saionji's delegation to the Paris peace conference the following year. After serving in the house of peers, he was prime minister, 1937-39, and during this term of office sanctioned the war on China. He subsequently became minister of state without portfolio and president of the privy council. In July 1940, after the resignation of Adm. Mitsumasa Yonai, he again became prime minister. He then organized the Imperial Rule Assistance association and also headed the Great Japan and Asia Development league, whose major goals were conquest of Asia and maintenance of close bonds with the axis. From all appearances, Konoye's ministry was dedicated to "moderation" in foreign affairs. Konoye resigned, July 16, 1941, and formed a new cabinet two days later without his foreign minister, Yosuke Matsuoka. This new government lasted only three months, and the prince was succeeded in Oct. 1941 by Gen. Hideki Tojo, who plunged Japan into the disastrous war with the United States. After the Japanese defeat, Konoye was ordered by Gen. MacArthur to stand trial as a war criminal. On the night that he was to give himself up-Dec. 16, 1945-Konoye committed suicide by taking poison. His son later disclosed political memoranda compiled by Konoye before his death, in which the prince put the burden of the blame for Japan's decision to attack the United States on Tojo and Matsuoka.

Korea

Part of the Japanese empire from 1910 until the defeat of Japan in World War II, Korea in 1945 became a theoretically independent state under Russian and United States military occupation. It is a peninsula extending south from northeastern Asia, between the Sea of Japan on the east and the Yellow sea on the west. To the north, it adjoins Manchuria and the maritime province of Siberia. The population on Oct. 1, 1940, was 24,326,327; area (including 1,018 adjacent islands), 85,225 sq.mi. Capital: Seoul (Keijo), pop. (1940) 935,464. Other principal cities: Pyengyang (Heijo) (285,965); Fusan (249,734); Seishin (197,918).

Prospects were never blacker for Korea than in the middle 1930s, when there was no hint of the emancipation that was to come within a decade. Japan had conquered neighbouring Manchuria, was in practical control of a part of North China, and in 1937 launched its war upon all China. In the meantime, it was fortifying the mandated islands and exerting increasing authority in southeastern Asia.

The liberties of Koreans were being further curtailed. Land was steadily concentrated in the hands of Japanese landlords. The long-standing rule that no language but Japanese must be used in the schools was more strictly enforced. Dissidents were severely punished. Obeisance at Shinto shrines was required not only of Shintoists, but of Buddhists and Korea's 500,000 Christians. Some Christian mission schools closed rather than submit to this re-

quirement. In 1939, as Japan became more completely totalitarian, large appropriations were made for the suppression of "thought crimes." Public unrest grew, and in 1940 a "Korean independence army" was fighting the Japanese in China. Americans were charged with encouraging the rebellious spirit of the people. In 1940 the church was placed under strict governmental control, and many U.S. missionaries were evacuated. Early in 1941, 17 missionaries and church members were imprisoned because suspicious Japanese police saw something sinister in their use of the Bible verse, "It is the Father's good pleasure to give you the Kingdom."

Foreigners who did not leave at this time were subjected, after the war against the United States began on Dec. 7, 1941, to inhuman torture, Ambassador Joseph C. Grew reported upon his return to the U.S. in 1942.

Koreans actively sabotaged Japan's war effort. They killed 1,080 Japanese in a revolt in Feb. 1942 and caused extensive damage to military installations. In March they attacked the Japanese air base on Quelpart island, setting fire to four hangars, destroying two large fuel tanks and 69 aeroplanes. Throughout World War II they continued to dynamite power plants, blow up bridges and otherwise hamper troop movements, and destroyed Japanese factories and police stations.

Japan sought to put many war industries out of range of Allied bombers by locating them in Korea. The country was a valuable base of war supplies, largely because of its wealth of minerals.

In the Cairo conference, Nov. 1943, President F. D. Roosevelt, Prime Minister Winston Churchill and Generalissimo Chiang Kai-shek issued a communiqué, one paragraph of which was of direct concern to Korea: "The aforesaid three great powers, mindful of the enslavement of the people of Korea, are determined that in due course Korea shall become free and independent."

The Japanese naturally failed to make public this commitment in Korea. However, some weeks later the news was smuggled into the country by Koreans operating in China. Unfortunately the term "in due course" was translated as "in a few days." The same error was repeated when the provision was widely published in Korean papers after the entry of United States forces Sept. 8, 1945.

By agreement with Russia at Potsdam, U.S. control was limited to south Korea below the 38th parallel while the Russians occupied the country north of this line. A cleavage not only in territory but in policy was soon evident. While the soviet introduced a modified communism in northern Korea and imprisoned Japanese officials and their collaborationists, Lieutenant General John R. Hodge, commanding the U.S. zone, announced that Japanese administrators including Governor General Noboyuki Abe would retain office for the time being. This action was taken in the interest of order and stability. The U.S. force was strictly a military mission unaccompanied by sufficient civil advisers to attempt direct administration of the country, and Koreans were deemed too inexperienced to undertake this responsibility at once.

So great was the storm of protest from Koreans, whose hopes had been raised by the prospect of freedom "in a few days," that the action of General Hodge was countermanded on Sept. 11 by General Douglas MacArthur, who ordered that Japanese officials be replaced as rapidly as possible "consistent with the safety of operations." Abe and others were transferred to Japan to await trial as war criminals. However, the purge was not sufficiently complete



d, S. Occupation forces, led by the 7th infantry division, began formal occupation of Korea early in Sept. 1945. Koreans lined the street to welcome these veterans of bitter fighting in the Southwest Pacific

to satisfy Korean patriots. Liberty of the press was allowed, and the Koreans took full advantage of it to criticize U.S. occupation policy.

The most vocal political elements were a group of patriots under Kim Koo and Dr. Syngman Rhee which for many years had sought in vain to be recognized by the United States as Korea's government-in-exile, and the "Korean People's Republic," made up of members of Korea's underground movement together with communists and other leftists and enjoying wide support among the Korean peasantry. The latter faction was at once recognized by the soviets, but neither it nor the "government-in-exile," otherwise known as the "Korean provisional government" was permitted to assume administration in the southern zone.

These parties remained the chief bidders for power, but other parties mushroomed until there were more than 50. To aid the U.S. military government, General Hodge appointed a Korean advisory council of 11 members. This council was popularly criticized as made up of landlords and industrialists and headed by a former collaborationist with the Japanese, Kim Seung Soo.

New resentment was aroused in Korea by the report of the Moscow Conference of Foreign Ministers in Dec. 1945. It recommended that a joint commission of U.S. and soviet representatives should be established which should assist in the formation of a provisional Korean government in preparation "for the working out of an agreement concerning a four-power trusteeship of Korea for a period up to five years."

This provision was so much at variance with the Korean understanding of the previous promise of freedom "in due course" that serious riots broke out at once throughout the country. Secretary James Byrnes on Dec. 29 hastened to clarify the Moscow report by explaining that the trusteeship would be as short as possible and might be averted altogether.

During 1946 the country suffered seriously economically because of its division into two zones and the lack of full co-operation between the two occupation forces. The industrial north needed the products of the agricultural south, and vice versa. Negotiations led to a slight raising of the bars on Feb. 7, 1946, when a joint U.S.S.R.-U.S. communiqué announced that transportation between the two zones would be permitted. In reality, however, such intercommunication continued difficult.

In October, riots, food demonstrations and a railroad strike resulted in the death of 38 Korean police. The

critical shortage of rice was blamed upon the administration. Handbills distributed in Seoul read, "Down with American Imperialism." The Russians too were having trouble, and thousands of Koreans attempted to cross the border into the southern zone, while dissidents in the south sought to go north.

Fugitives from the Russian zone reported that the industries were being dismantled and the machinery shipped to Russia. The U.S. reparations commissioner, Edwin W. Pauley, was finally permitted to visit the soviet zone and reported these rumours lacking in foundation. He found the zone's heavy industry reasonably intact.

Failing to agree with the soviets upon the formation of a government for all Korea, the U.S. military government in Oct. 1946 approved an ordinance providing for an interim legislative assembly for southern Korea to consist of 90 members, 45 elected and 45 nominated by General Hodge. The assembly was constituted forthwith. General Hodge held the right to veto legislation, dissolve the assembly, or approve new members. The assembly, its powers thus limited, failed to satisfy political groups which, however, were unable to agree upon a constructive program. Dr. Syngman Rhee, now head of an organization known as the National Society for the Rapid Realization of Independence, barely escaped assassination, as did Lyuh Woon Hueng, chairman of the People's party and the Democratic National Front.

In December General MacArthur reported a wave of strikes and serious delay in industrial recovery. Three newspapers were listed as suspended, and a railroad strike was condemned as having been carried out with political motives "to discommode and discredit the U.S. forces in Korea." There was evidence of increasing sternness in dealing with disorderly elements. However, the report urged Koreans to assume more governmental responsibility and stated that the U.S. authorities would henceforth act only as advisers.

Preparation of the Koreans to solve their own problems was seen in the visit to the United States of six members of the Korean Educational commission to study methods of modern education, possibly Korea's greatest need. Of Korea's 4,892,418 children of school age, only 1,721,873 were in school. It was estimated that to educate all, 52,800 new teachers were needed. Korea had only 16 normal schools, and these could supply only some 2,000

K	or	ea	: .	Stal	istical Data, 1938	
ltem					Value	Amount or
Exchange rate					(000's omitted)	Number yen=28.45 cents U.S (1s. 2d)
Finance						(13. 20)
	٠	•	٠	•	\$133,921* (£27,392)	
Government expenditures National debt	•	٠	٠	•	\$115,803* (£23,686) \$168,898* (£34,547)	
Transportation	•	•	•	•	\$100,070 (234,347)	
Railroads						3,090 mi.
Highways		٠				17,011 "
Communication						
Telephones	•	•	٠	٠		48,972
Radio sets	•	•	•	•		5,416 mi. 135,055†
Crops	•	٠	•	•		133,033 }
Rice						3,991,302 tons
Barley	٠	•	•	•		3,991,302 tons 1,226,376 "
Millet	•	٠	٠	•		803,920
Burdock	•	•	٠	•		672,824 "
Poultry						7,165,000
Cattle				:		1,717,000
_ Swine	•	•	•			1,507,000
Forest Products					£17.110.100.70.11	
Total	•	٠	٠	•	\$47,442 (£9,704) \$11,360 (£2,324)	03 5/0 936 411 ft
Fagots	:	:	:	:	\$9,738 (£1,992)	93,548,826 cu.ft.
Branches and leaves					\$7,184 (£1,469)	•••
Compost materials			٠		\$7,036 (£1,439)	
Sea products					**********	
Total	•	•	٠	•	\$24,776 (£5,068) \$21,895 (£4,478)	• • •
Manufactures	•	•	٠	•	\$21,673 (£4,476)	• • • •
Total					\$276,194‡ (£56,493)	
Chemical and pharmaceutic	al				\$80,244‡ (£16,413) \$40,640‡ (£8,313)	
Textiles	•	•	٠	٠	\$40,640‡ (£8,313)	• • •
Food	•	•	٠	٠	\$40,089‡ (£8,200)	• • • •
Exports Total					\$250,257 (£51,188)	•••
Rice	:	:	:	:	\$89,071 (£18,219)	
Fertilizer					\$11,473 (£2,347)	
Cotton cloth		•	•	•	\$9,157 (£1,873)	•••
Soya beans	•	•	٠	٠	\$6,291 (£1,287)	•••
Total					\$300,422 (£61,449)	•••
Machinery and instruments					\$26,552 (£5,431)	•••
Silk cloth				٠	\$26,552 (£5,431) \$21,367 (£4,370)	• • •
Fertilizer	•	•	•	٠	\$10,998 (£2,250)	•••
Coal	•	•	•	•	\$8,890 (£1,818)	•••
Elamana manana ala						3,372
						1,311,270
High schools						110
Students	•	•	•	•		50,144
Technical schools	•	•	٠	•		226 34,060
Normal schools	:	:	:	:		10
Students						5,565
Special colleges						18
Students	•	•	•	•		4,015
*in 1940: revenues \$157,9	87	(5,130 (£40,504); no
data on national debt.			•	119	39. ‡1 <i>937</i> .	

teachers a year. With the removal of Japanese personnel, the urgent need of the country was the training of Koreans in industry, banking, commerce, government and the professions. As a first step, plans were completed before the end of 1946 to send 300 Korean students to the U.S. for advanced technical training.

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Initiation rites for several hundred new members of the Association of Georgia Klans on Stone mountain, Ga., May 9, 1946. Proceedings to revoke the charter of the older Ku Klux Klan were instituted by the state of Georgia the following month

Krueger, Walter

Krueger (1881-), U.S. army officer, was born in Flatow, Germany, on Jan. 26, 1881. Taken to the U.S. as a child, he attended the Cincinnati Technical school from 1896 to 1898 and left school to enlist as a private at the outbreak of the Spanish-American war. He later saw action during the Philippine insurrection, on the Mexican border and during World War I. From 1921 to 1938 he filled various posts at army schools and on the general staff. Promoted through the grades, he became a brigadier general in 1986, major general in 1989, and lieutenant general in 1941. In 1941 and 1942 he commanded the 3rd army in the United States. When the 6th army in the Southwest Pacific was organized early in 1943, Gen. Krueger was sent to Australia to take command. He directed the U.S. invasion of New Britain in Dec. 1943 and the operations in New Guinea the following year. He also led the U.S. ground forces which took part in the landings on Leyte Island in the Philippines on Oct. 20, 1944, and in the Luzon invasion of Jan. 9, 1945. Krueger was named to the temporary rank of a full general in March. In Jan. 1946 he relinquished the command of the 6th army.

Krug, Julius Albert

Krug (1907-), U.S. government official, was born Nov. 23, 1907, in Madison, Wis. He received his M.A. degree at the University of Wisconsin in 1930. Krug was associated with the Federal Communications commission as a public utilities expert in 1936-37, was chief power engineer of the Tennessee Valley authority from 1938 to 1940, and chief power consultant of the Office of Production Management in 1941. He then worked with the War Production board and was appointed program vice-chairman of the WPB and director of the Office of War Utilities in Feb. 1943. After the Allied invasion of France, Krug, who had left the WPB to accept a commission as a lieutenant commander in the navy early in 1944, went to France to help restore public utilities there. When Charles E. Wilson resigned as executive vice-chairman of the WPB and chairman Donald M. Nelson was on a visit to China, Pres. Roosevelt called Krug back to the WPB in Aug. 1944 to assume the post of acting chairman. With Nelson's resignation the following month Krug became chairman. One year later Krug resigned. In March 1946 he succeeded Harold Ickes as secretary of the interior.

Ku Klux Klan

The Ku Klux Klan, which gradually had lost membership in the depression years, became an appendage of U.S. fascist groups during the decade 1937-46. In the first year of World War II, its membership, which was almost



altogether confined to the eastern seaboard, was associated closely with the German-American Bund.

A nucleus of membership remained in the south. Investigation into the activities of the Klan's imperial wizard, Hiram W. Evans, as agent for numerous companies selling road-building materials to the state of Georgia, led to an antitrust indictment and civil suit in the federal courts. Evans was superseded as imperial wizard. The organization was formally dissolved in 1942, after a series of outrages, including a fatal flogging, had been linked to the Oakland City (Georgia) Klavern of the Klan.

In 1946 the Klan reinstated its Georgia charter, and began active membership campaigns in the south, and in eastern and mid-western industrial centres. The southern campaign was directed against Negroes, while that in other sections stressed anti-Semitism.

By direction of Gov. Ellis Arnall, Georgia brought action to surrender and cancel the Klan's charter and to dissolve the corporation in June 1946. Other states took similar action, including Kentucky and New Jersey. Klan officials contended that the parent organization had been dissolved, that local Klaverns were autonomous, and that the unity of the organization was maintained wholly by voluntary state associations of individual Klans. Klan membership in 1946 was estimated at 65,000 by some observers, but spokesmen for the order offered figures varying from 150,000 to 400,000 and claimed a widespread distribution of Klaverns.

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Kung, H. H.

), Chinese financier and statesman, Kung (1881was born in Taiku, Shansi province, of a family tracing its ancestry back 75 generations to Confucius. Educated in the United States, he took his bachelor's degree from Oberlin college in 1906 and his master's degree from Yale in 1907. He married Ai-ling Soong, one of the three famed sisters who were to play an important part in modern Chinese history (the others: Mme. Chiang Kai-shek and Mme. Sun Yat-sen). In 1931 Kung became a member of the Kuomintang Central Executive committee. He was made minister of finance and concurrently vice-president of the Executive Yuan in 1933. He probably owed his long tenure of office as minister of finance to the fact that he was more amenable to dictation from Chiang Kai-shek than his more brilliant but somewhat temperamental brother-in-law, T. V. Soong. In 1937, after a trip to Europe, where he was feted by the nazis, Kung went to the United States to negotiate loans for China. During 1937 and 1938 he acted as president of the Yuan to permit Chiang Kaishek to devote all his time to war problems. Chiang resumed the presidency in Nov. 1939 and Kung continued as vice-president and finance minister. In June 1944 Kung headed the Chinese delegation to the United Nations monetary conference. He was replaced as finance minister in Nov. 1944.

In May 1946 he resigned as vice-president and as governor of the central bank of China.

Kure (Ocean) Island

See PACIFIC ISLANDS, U.S.

Kurusu, Saburo

Kurusu (1886—), Japanese statesman, was born in Yokohama and studied for a diplomatic career. He entered the foreign service in 1910 and served as consul in Chicago, New York city, the Philippines and Honolulu. He was named minister to Peru in 1928, and was director of the commerce bureau at the Japanese foreign office from 1932 to 1937, when he became ambassador to Belgium. Later, as ambassador to Germany, he signed the Rome-Berlin-Tokyo pact of Sept. 27, 1940. In Nov. 1941 he was sent to the U.S. ostensibly to assist Japanese Ambassador Nomura in a final peace effort. He started peace negotiations with President Roosevelt and Secretary of State Hull on Nov. 17, 1941; on Dec. 7 the Japanese launched their attack on Hawaii.

Kurusu retired from the Japanese diplomatic service in Feb. 1945.

Kuwait

See ARABIA.

Kwajalein

See Marshall Islands; Pacific Islands, Mandated; World War II.

Kyanite Minerals

This group of minerals includes kyanite and the closely related andalusite, dumortierite and sillimanite. Only kyanite was produced in any quantity in the United States during the decade 1937–46, but there were small outputs of andalusite and dumortierite. Extensive deposits of sillimanite in Georgia, South Carolina and North Carolina were a war discovery giving promise of possible commercial development.

Demand for kyanite continued to exceed output in the United States, and imports, mostly from India, generally exceeded output.

Supplies of kyanite during the years of World War II were as follows in short tons:

	Domestic Shipments	Imports	Total Supply	Stocks
1940	4,241	7,658	11,899	?
1941	8,335	14,285	22,620	?
1942	8,708	6,524	15,232	9,485
1943	9,651	9,972	19,533	10,889
1944	?	5,735	?	8,618
1945	;	14,554	3	8,000

Kyanite is used as a high grade refractory and andalusite, dumortierite and sillimanite are used in making spark plug cores. (G. A. Ro.)

Labor, U.S. Department of

See GOVERNMENT DEPARTMENTS AND BUREAUS.

Labor Relations Board, National

See NATIONAL LABOR RELATIONS BOARD.

Labour

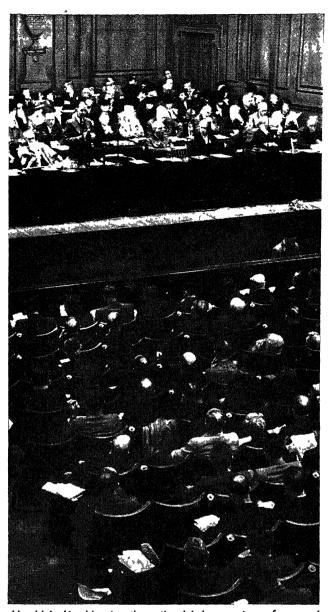
See Agriculture; Child Welfare; Employment; International Labour Organization; Labour Unions; Law; Motion Pictures; National Labour Relations Board; National Mediation Board; Negroes, American; Relief; Shipbuilding; Societies and Associations; Strikes and Lockouts; Supreme Court of the United States; United States; Wages and Hours; War and Defense Agencies; War Production.

Labour Party, Great Britain

During the years preceding World War II, the British Labour party took a strong line in support of the policy of collective security; in 1938 it opposed the Munich settlement. It worked for an understanding with the soviet union, based on the policy of collective security through the League of Nations, but it rejected all proposals for a united front with the other working-class parties or for a popular front on a broader basis to oppose fascism, despite considerable support for these movements among its members. In 1939 it had undoubtedly a body of popular backing considerably in excess of its strength in parliament.

On the declaration of war in 1939 the Labour party, despite its disapproval of the Chamberlain government, at once pledged its full support, but refused to enter into coalition under Neville Chamberlain's leadership. After the disasters of the early months of 1940 it was largely responsible for the fall of the Chamberlain government and it entered into the new coalition government formed under Winston Churchill. Clement Attlee became deputy prime minister, and Ernest Bevin minister of labour and national service; other Labour members prominent in the new government included Herbert Morrison, Arthur Greenwood and Hugh Dalton. Attlee and Greenwood were members of the war cabinet, and were soon joined by Bevin. Morrison, though a member of the government from 1940, joined the war cabinet only in 1942. Sir Stafford Cripps, who also became a member in that year, was still outside the Labour party, from which he had been expelled in 1939 on account of his agitation for a united front with the Communist party. He rejoined only shortly before the general election of 1945.

In the wartime coalition government the Labour ministers played a leading part, especially in the direction of home affairs. When the European war ended, the Labour party was prepared to remain in the coalition for a limited period; but Churchill insisted either that it should pledge itself to remain until the war in the far east ended, or that the coalition should be broken up at once. Then followed the hurried general election of 1945, in which the Labour party scored an unexpectedly handsome victory, winning 394 seats in a parliament of 640. Clement Attlee became prime minister, with Bevin as foreign secretary, Dalton as chancellor of the exchequer and Morrison as lord president of the council, with a co-ordinating position in home affairs. Aneurin Bevan went to the ministry of health and Sir Stafford Cripps to the board of trade. The incoming government had appealed to the country on an immediate program, Let Us Face the Future, in which it pledged itself during the life of parliament, if it were returned to power, to a considerable, but limited plan of nationalizing key industries and services (Bank of England, coal mining, public utilities, steel and inland transport) as well as to the maintenance of necessary controls, the pursuit of a policy of full employment, the Beveridge plan of social insurance, comprehensive development of a national health service, an active housing plan based mainly on municipal building and the effective control of land use, and location of industry by drastic reforms of land law and of town-planning legislation. In external affairs it pledged full support to the United Nations organization, then being set up, freedom for India and a forward policy of colonial development aiming at self-government. During its first year of office it carried through a large instalment of this program. The Bank of England and the coal mines were



Harold Laski addressing the national Labour party conference at Bournemouth, England, in June 1946. Delegates to the conference took stock of the party's achievements after ten months in power and considered matters of future policy in domestic and foreign affairs

nationalized; a new National Insurance act based on the Beveridge plan was passed; family allowances came into operation; a National Health Service bill was carried through the house of commons and in India, after a failure to achieve agreement between Hindus and Moslems, a government based on the Congress party was installed in power. A beginning was made with new town and country planning measures by the New Towns act of 1946; in housing and food, the two most difficult domestic problems, the government did what it could in face of the acute shortage of building labour and of the serious world food crisis of 1946. The course of by-elections showed that during its first year of office the Labour government had lost little, if any, of its popularity. The legislative program for 1946-47 included prison reform, comprehensive legislation on land use and the nationalization of electricity, gas and inland transport.

Labour party membership fluctuated considerably. Af-

filiated trade union membership was affected up to 1946 by the Trade Unions act of 1927, passed after the general strike of 1926. This act substituted "contracting-in" for "contracting-out" as the basis of trade union political membership (i.e., a member had to sign a form asking to pay instead of one asking not to pay towards the union's political fund); and it also prevented civil servants' unions from belonging to the party. The repeal of the act in 1946 was expected to lead to a sharp increase in membership. Individual membership of the local parties was rising up to 1939, but fell off greatly during the war, owing to the call-up for the forces and to much internal migration. It was recovering fast in 1946, and many new branches of the party were being formed, especially in country districts. By the middle of that year it had reached nearly 500,000, after being down to about 200,000 in 1942. (See also Great Britain and Northern Ireland, UNITED KINGDOM OF; SOCIALISM.)

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(G. D. H. C.)

Labour Unions

During the ten years beginning in 1937, the U.S. labour movement went far in unionizing all branches of U.S. industry. Its membership multiplied at an unprecedented rate, rising from less than 5,000,000 in 1937 to more than 12,000,000 in 1946. The great majority of the traditionally nonunion industries, such as steel, automobiles and food production, were unionized. Labour organization spread not only to wage earners, but also to all classes of salaried or white-collar workers, causing the rise of large unions of clerks, salesmen, technicians and engineers, and public servants.

Within the labour movement there arose a new federation of labour to challenge the supremacy of the A.F. of L. The Congress of Industrial Organizations (C.I.O.), began as a more or less informal insurgent movement within the A.F. of L., started by such established leaders as John L. Lewis and Sidney Hillman and the leaders of the new unions of automobile and rubber workers. The A.F. of L. took steps to discipline the insurgent unions, which thereupon withdrew from the federation. The C.I.O. thus became an independent organization. It began organization campaigns, particularly among the mass-production industries. Its successes in organizing steel and automobile companies were so great that it achieved by 1940 the status of a permanent federation of labour, claiming more than 4,000,000 members and challenging the jurisdiction of the A.F. of L. throughout U.S. industry.

The rise of organized labour during these years was a direct effect of public policy. Arising mainly out of experience with the prolonged and devastating depression of 1929-33, there were new views of economic policy in general, and labour policy in particular. The core of the views as to labour policy was the belief in rising rates of wages as the source of expanding purchasing power and stable business conditions. Hence it was deemed to be wise public policy to raise wages by the more extensive practice of collective bargaining and by minimum wage laws.

The federal government therefore embarked upon an ambitious program of labour legislation. Beginning in 1932 with the Norris-LaGuardia anti-injunction act, which aimed to free labour unions from traditional curbs, and in 1933 with Section 7a of the National Industrial Recov-

ery act, which aimed to encourage the unionization of industry, congress passed and the president signed on July 5, 1935, the National Labor Relations (Wagner) act.

This act was the cornerstone of the new labour policy. Its purpose was the promotion of unions and collective bargaining. It was a far-reaching statute not only in its provisions, but in the power that was granted to the act's administrative agency, the National Labor Relations board. The Wagner act was a unique labour statute in that it specified in detail the classes of unfair practices which were forbidden to employers and the conditions under which unions could be chosen to represent employees for bargaining purposes.

The full effect of the Wagner act was not felt until the constitutionality of the law and the powers of the NLRB were defined by the U.S. supreme court. This was done in five decisions announced by the court on April 12, 1937. These decisions established the authority of the federal government to regulate labour conditions in manufacturing establishments and confirmed the constitutionality of the Wagner act on unusually broad grounds. From that time on the Wagner act and its administration became potent influences in the growth of organized labour. The agencies of government not only removed obstacles in the path of unions but did all they could to promote organization.

To the influence of legislation were added the conditions of war. World War II, like its predecessor, required enormous production and industrial peace. The government established special labour agencies to deal with potential and actual labour disputes. On March 19, 1941, the president created the National Defense Mediation board. This board disbanded in December because of its inability to handle a closed-shop dispute in the coal industry. Its successor, the National War Labor board, was set up on Jan. 12, 1942. (See WAR AND DEFENSE AGENCIES.)

Conditions of labour shortage and the friendly attitude of the War Labor board contributed further to union growth and power. By the end of the war, the unions had amassed an additional 4,000,000-5,000,000 members. Organized labour found it not only easy to organize, but it

"Look Out! Those Are Boomerangs," Bishop of the St. Louis Star-Times cautioned labour in 1944





New York delegates of the C.I.O. arriving at Washington, D.C., to support the Kilgore bill in 1945. Backed by Pres. Truman, the bill provided maximum unemployment benefits of \$25 weekly for 26 weeks

received concessions from the NWLB which added to its permanent strength.

When the war was over, the combination of strong unions and large demands for concessions in working conditions produced the first postwar labour crisis. The year 1945-46 was one of the most troubled in the history of U.S. labour relations. The numbers directly affected by strikes exceeded all previous records. A strike of locomotive engineers and railroad trainmen caused the president to end the strike by a radio appeal to the members of the unions. Congress reacted to the disturbances by adopting with large majorities drastic amendments to the Wagner act and other changes in the basic labour law of the United States. This attempt to rewrite the law of trade unions was the first serious effort in this direction since the passage of the Wagner act in 1935. The proposed law, the Case bill, was vetoed by the president, but it had won large support throughout the country.

Much of the strength of organized labour in these years was derived not only from favourable public policies but also from the organized political power of labour. Although the A.F. of L. had developed an influential labour lobby in Washington and state capitals, it remained for the C.I.O. to undertake to mobilize the political power of organized labour. Among other things the C.I.O. established a political arm, the Political Action committee (q.v.), to exert the maximum political influence of labour in national and local election. The political activities of the C.I.O. were considered to have given effective assistance to the Democratic party during the years of the Roosevelt administration.

The turn in both the political and economic power of organized labour came probably in 1946. The memory of the sit-down strikes of 1936–37 and the wave of postwar strikes of 1945–46 caused a strong reaction against unions in public opinion. There was more frequent and more general questioning of the soundness of a national labour policy which produced such strong unions and so much labour trouble. Largely because of dissatisfaction with the labour situation, the Republicans swept the congressional elections of 1946. (See also Business Review; Communism; Law; National Labor Relations Board; Strikes and Lockouts.) (L. Wo.)

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Labour Unions in Great Britain.—During the period 1937–46 there was a considerable rise in the membership of the British trade unions, and an even more considerable increase in their effective strength. In 1925, the total membership was about 5,500,000. Right up to the outbreak of World War II, the trade unions were still suffering from the after-effects of their defeat in the general strike of 1926. The total fell to 4,392,000 in 1933. Thereafter, it gradually climbed back to 6,234,000 in 1939, and by the end of 1944 total membership had reached 8,024,000. After that there was a further rise, probably to about 9,000,000 in 1946.

The great increase in the employment of women's labour during the war years led to a sharp rise in female membership, from 925,000 in 1938 to 1,805,000 in 1944. The total female working population of Great Britain declined from about 7,500,000 at the wartime peak to about 5,700,000 by the middle of 1946, or, exclusive of women in the armed services, from about 7,000,000 to about 5,500,000. Nevertheless, some lasting increase in the number of women trade unionists seemed probable, though the decline in numbers employed in the cotton industry, for-

Tenth annual convention of the United Automobile Workers of America, at which Walter P. Reuther succeeded R. J. Thomas as president of the militant C.I.O. union on March 27, 1946





Striking London dock workers presenting a show of hands to signify support of union policy during the most widespread postwar strike of 1945 in Great Britain

merly the principal women's industrial occupation, was certain to be permanent. Shortage of manpower in industry generally, and the desire of more women to have independent incomes would tend to swell the numbers employed in industry; but a part of this increase would be offset by a fall in the numbers employed in domestic service. As domestic servants were still almost entirely unorganized, the effect would be to bring a larger proportion of employed women within the range of trade union influence.

Structurally, the trade union movement underwent little change from 1937 to 1946. The most important changes were consolidation of the Miners' federation, made up of a number of independent district unions, into the National Union of Mineworkers, and the opening of the Amalgamated Engineering union, the largest society of skilled workers in manufacturing industry, to female members. There was some tendency towards closer federal action between the unions in different branches of the same industry, in particular in engineering, where the breach between the A.E.U. and the Confederation of Shipbuilding and Engineering Trade unions, including the smaller societies and the main body of the less skilled workers, was healed. The other important amalgamation was that of the two main unions catering to distributive workers-the National Union of Distributive and Allied Workers, which had its main strength among Co-operative employees, and the National Amalgamated Union of Shop Assistants, Warehousemen and Clerks, which was strongest in the big private department stores and multiple shops. The new body became known as the National Union of Distributive, Shop and Allied Workers.

Established methods of collective bargaining continued in force throughout the war; but when the parties failed to agree the matters in dispute were referred for settlement by arbitration, usually by the National Arbitration tribunal set up by the government to develop the peacetime

voluntary arbitration activities of the industrial court (set up in 1918). Inevitably, during the war, the government became involved in the adjustment of wages questions, especially in coal mining and in agriculture; but, in general, matters were left in the first instance to ordinary trade union bargaining, and the National Arbitration tribunal or the state department concerned came in only in the last resort. Smooth working was facilitated during the war by the creation of a National Industrial Advisory committee representing the Trades Union congress and the principal employers' organizations; and similar advisory committees were set up in the main departments which were concerned with labour questions. Especially after the formation of the coalition government in 1940, trade unions were steadily consulted in all matters affecting their members' interests; and many trade unionists became temporary civil servants and played an active part in the adjustment of labour difficulties. Smooth working was also helped by the setting up in war factories of joint production committees, to advise on questions of output and workshop organization; and this system seemed likely to become permanent. The wartime advisory committees of trade unionists and employers were also reconstituted on a peacetime basis in connection with the main departments of government.

Throughout the war years strikes were few, and mostly short and unimportant. They were usually "unofficial," i.e., called without the sanction of the trade union executives, and arose mainly out of local grievances. From 1939 to 1945, the average number of days lost annually as a consequence of trade disputes was well under 2,000,000, and the average number of workers involved well under 500,000. There was a small rise in strike activity in 1944 and 1945, but it was not large enough to be significant or to cause any serious loss of production. Indeed, after 1926,

the severity of strikes in Great Britain was much less than it had been previously; and the vast majority of differences in peace as well as in war were settled by negotiation without stoppages of work.

From 1927 to 1946, the Trade Unions and Trade Disputes act, passed by the Conservative government as a sequel to the general strike, was in force. This act imposed severe limitations on strike activity, especially on picketing, and created a class of "unlawful" strikes which it was an offense to foment or to assist. These were strikes extending beyond a single trade or industry where they were also designed to coerce the government-a not too clear category, which was in fact never put to the test in the courts. The act of 1927 also prevented unions of workers in the national service from affiliating to either the Trades Union congress or the Labour party, and limited political action by trade unions, substituting "contractingin"-i.e., signed indication of willingness to subscribefor "contracting-out" as the basis of trade union connection with the Labour party. During the existence of the coalition government, repeated attempts were made to get the act modified by agreement; but the Conservative party would not consent to this, and consequently the entire act was repealed in the spring of 1946, and the law put back to where it stood before 1927. The trade unions in the post office and the largest unions of civil servants rejoined the Trades Union congress, and most of them would probably resume connection with the Labour party as well.

During the summer of 1946, there was much discussion in the British press of an alleged desire of the trade unions to enforce the principle of the "closed shop." Much of this discussion was confused because of a failure to distinguish between two quite separate issues that were involved. The trade unions had, of course, always aimed at "100% membership," and in some cases-e.g., the miners -had attempted, when strong enough, to make trade union membership a condition of employment, as it actually had been in most of the coal fields before the defeat of 1926. This policy, however, had not usually been interpreted to mean that all employees in an industry must belong to a single union, and in practice unions had usually recognized one another's cards fairly freely. The second issue was that which arose out of certain breakaways from established unions, resulting in the formation of small, independent unions which the Trades Union congress and the established unions refused to recognize. The trade unions affected, particularly the Transport and General Workers, endeavoured to secure exclusive recognition, for the grades they mainly covered, and in some cases the enforcement of membership as a condition of employment, as a means of dealing with these "breakaways"; but it was made clear at the Trades Union congress of Oct. 1946 that there was no intention generally to enforce the "closed shop," or to insist on membership of a particular trade union. It had, of course, to be borne in mind that there was in Great Britain no such rift as existed in the United States between two rival trade union movements. The breakaway unions did not stand for any common principle or policy, and were of little numerical strength or importance.

The Trades Union congress, which included all the important unions of manual workers and a considerable number of those formed among nonmanual workers, strengthened its position as the central body representing the trade union movement as a whole. In 1946 it had an affiliated membership of 6,671,120, organized in 192 unions, as compared with 4,669,000, in 170 unions, in 1939. The

total number of unions included in the government returns was about 940, but this included many very small local societies, some of which were in the Scottish Trades Union congress. The T.U.C., together with the Labour party and the Co-operative union, formed the National Council of Labour, which was the general co-ordinating body for the entire movement. It had been strengthened by the adhesion of the Co-operative union in 1942. Trade union membership of the Labour party amounted in 1945 to 2,510,000, as compared with 2,214,000 in 1939. This figure was expected to be considerably increased as a result of the return of men from the forces and the repeal of the Trade Unions act of 1927.

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Labrador

See Newfoundland and Labrador.

Lacrosse

One of the greatest teams in world lacrosse history occupied the spotlight at the beginning of the decade 1937–46, with 33 consecutive victories over some of the best aggregations the sport had produced. This was the renowned Mt. Washington club of the United States. But its master revealed itself in 1937 in the form of the Baltimore Athletic club which defeated Mt. Washington in a game at Baltimore, Md., to win the United States national open lacrosse title in a great upset.

In the same year the United States Intercollegiate Lacrosse association sponsored and managed a composite All-American team in a series of exhibition games in England during the summer. The U.S. team met with a measure of success against some English opponents but found others too strong. The exhibition series wound up with the U.S. squad having broken about even on games won and lost. The club teams playing in Canada, England and the United States all reported good seasons.

In 1938 Mt. Washington headed the list of clubs, nosing out the formidable Baltimore A.C. twice to establish a clear claim to the club championship. Subsequently in the open championship, St. John's of Annapolis defeated Mt. Washington, thus leaving that situation in something of a muddle. In Great Britain the game enjoyed another banner year in 1938, and while the all-star U.S. ten did not visit England as they had in 1937, the Britons found excellent competition among their own numerous university and club leagues. The Canadian branch of the sport flourished as usual with the dominion universities setting the pace.

Johns Hopkins university, Baltimore, Md., long a power in the sport, reached its peak in 1940 by defeating the mighty Navy. Maryland, completing an undefeated season, inflicted the only loss Johns Hopkins suffered, 7–6.

Navy subsequently declined. Maryland, Johns Hopkins and Princeton were at the top of the collegiate heap. Princeton, though losing to Maryland and Johns Hopkins, beat all other rivals. Swarthmore, playing nearly in its class, was undefeated and won the Pennsylvania league championship. Duke and North Carolina were the best in the Dixie league. The All-Star northern team beat the All-Star southern team for the first time in the history of this annual meeting, 6–5.

The year 1941 in lacrosse centres was marked by the return to top strength of Johns Hopkins. At the same time

one of the surprises of the year was the unexpected strength of Dartmouth and Syracuse. Johns Hopkins, one of the oldest lacrosse centres in the world, came through an undefeated season and crowned this achievement by defeating the Mt. Washington club, the first time the latter had been set back in two years. The game for the first time spread to the U.S. middle west. Kenyon college, Gambier, O., Oberlin, Oberlin, O., and Michigan put teams on the field, and their performances were well received by the public. The annual north-south lacrosse game was won by the southerners with a 7 to 6 victory.

Fielding the finest team in its history, Princeton university won the intercollegiate lacrosse championship in 1942 and thus wrested the title from the state of Maryland for the first time in many years. The Tigers' 12-10 victory over the University of Maryland and their 4-2 decision over Johns Hopkins of the same state were the highlights of the season.

The annual north-south game in Baltimore resulted in a 6-4 victory for the north, but in a special abbreviated game two weeks later in New York, the south was the winner, 5-1.

Like most college sports which had been affected by drafting of men into military service, lacrosse in the United States slowed down for the duration of World War II. This increased the interest in women's lacrosse, which in 1942 was represented by teams from Boston, Baltimore, Philadelphia, Westchester, New York, and a few cities in the middle west where the game was being introduced at girls' colleges.

In 1943 the two best teams in the country were Navy and Maryland. On the distaff side, Philadelphia clinched its tenth National Women's Lacrosse association tournament title by defeating the Etceteras 12–2. The latter squad was made up of college girls.

The U.S. military academy placed ten men on the 1944 All-America team and the same school won the Wingate trophy presented to the leading college team. Navy and Stevens Tech, Hoboken, N.J., received honourable mention for that award and each of those schools placed two men on the All-America team. The annual William Schmeisser Memorial trophy, awarded to the outstanding defensive player, went to Fred Allner, of Cornell and formerly of Princeton. Cornell also placed Brooks Tunstall on the All-America team.

The 1945 season, returning to normal, saw Army and Navy tie for the Wingate trophy.

The 1946 U.S. intercollegiate championship was won by Navy. The women's national championship went to a team from Philadelphia, Pa., which defeated Westchester, N.Y., by a score of 6 to 5.

In Canada, box lacrosse made a strong comeback with the return to action of the New Westminster Adanacs, the team that won the Mann cup in 1939 but which had been out of play because of the war. The Mann cup for 1945, emblematic of Canada's lacrosse supremacy, was won by the Vancouver Burrads who defeated the St. Catherine's Athletics.

(T. J. D.)

La Follette, Robert Marion, Jr.

La Follette (1895—), U.S. politician, was born Feb. 6, 1895, in Madison, Wis., son of the elder Robert La Follette, former governor and senator from Wisconsin and independent presidential candidate in 1924. The younger La Follette studied at the University of Wisconsin but left school because of illness. After recovering his health

he decided to become his father's secretary instead of continuing his studies. In 1925 he ran for the seat in the U.S. senate left vacant by the death of his father and was elected by a substantial majority. He was re-elected in 1928. In 1934 La Follette split with the Republican party and, running as candidate on the Progressive ticket, was again elected in the November voting. Named to the senate finance committee in Jan. 1930, he sided with the liberal elements and frequently made common cause with George Norris, William E. Borah, Robert F. Wagner and Smith Brookhart.

In 1940 La Follette lost much of his New Deal support by his unalterable noninterventionist stand; his position was that the United States should not enter any war except in the case where it or any of its territorial possessions or any other western hemisphere nation was attacked.

Upon his re-election to the senate in 1940, he continued his energetic attacks against the administration's foreign policy. In March 1946 the Progressive party of Wisconsin voted by an overwhelming majority to rejoin the Republican party. However, the Republicans failed to nominate La Follette for the senatorial candidate in the 1946 elections, picking Joseph R. McCarthy instead at their convention on May 5, 1946.

La Guardia, Fiorello Henry

), U.S. politician, was born in La Guardia (1882-New York city on Dec. 11, 1882. From 1901 to 1906 he served in U.S. consulates in Hungary and Austria, and returned to the U.S. to graduate from New York university law school in 1910. As congressman from New York from 1917 to 1921 and again from 1923 to 1933, he appeared as a militant liberal. In 1983 he was elected mayor of New York city and was re-elected in 1937 and in 1941. He was regarded as a reform candidate and received the support of the American Labor party of New York as well as of the Fusion party. In Aug. 1940 President Roosevelt appointed him chairman of the U.S. section of the Canada-U.S. joint board of defense, and in May 1941 he was named director of the Office of Civilian Defense. La Guardia resigned the directorship in Feb. 1942. In Nov. 1945 his term of office as mayor expired. He succeeded Herbert Lehman as director general of the United Nations Relief and Rehabilitation administration in March 1946.

Lamb

See MEAT.

Lambeth Walk

See DANCE.

Land, Emory S.

Land (1879-), U.S. naval officer and government official, was born Jan. 9, 1879, in Canon City, Colo. He was graduated from the University of Wyoming, Laramie, Wyo., in 1898, from Annapolis in 1902, and from the Massachusetts Institute of Technology, Cambridge, Mass., in 1907. During World War I, he served on the staff of Adm. William Sims in London. He was associated with problems of naval construction, serving as chief of the navy's bureau of construction and repair from 1932 to 1937. Made a rear admiral when he retired from the navy in 1937, he was named commissioner of the U.S. maritime commission, and succeeded Joseph Kennedy as chairman in 1938. Soon after the U.S. entered World War II, Adm. Land was also made administrator of the War Shipping administration. In this dual capacity he had control of the requisitioning, purchase, use and operation of all

Land Banks

See FARM CREDIT ADMINISTRATION.

Lange, Oscar Richard

Lange (1904—), Polish statesman, was born in Tomaszow, Poland, July 27, 1904. He received his LL.M. degree from the University of Cracow in 1926 and his LL.D. in 1928, becoming a lecturer in economics and statistics at that institution in 1931. He later joined the Socialist party. Lange went to the United States in 1934 as a fellow of the Rockefeller foundation and studied at Harvard university, Cambridge, Mass., and at the University of Minnesota, Minneapolis. In 1936, he became lecturer at the University of Michigan, Ann Arbor. After a brief trip to Poland, 1936-37, he returned to the U.S., joined the faculty of the University of Chicago in 1938 as assistant, becoming a full professor of economics in 1943. In the latter year, he also received his full U.S. citizenship papers.

An ardent opponent of the policies of the Polish government-in-exile in London, he supported the thesis of establishing a government that would be friendly and not antipathetic to the soviet union. In 1944, he visited Stalin in Moscow and discussed the Polish question. In the summer of 1945, Lange was offered the post of Polish ambassador to the U.S., he went to Poland, relinquished his U.S. citizenship and returned to Washington in December as the Polish envoy. He also was Poland's delegate to the U.N. security council sessions that opened in March 1946 in New York city.

Languages

It was hardly surprising that the conditions obtaining generally before the outbreak of World War II should be such as to inhibit original work in the linguistic field. Such was the case and, indeed, many well-established linguistic undertakings had to suspend activity for the greater part of the period 1937–46. Some institutions closed down altogether; others became temporarily inactive.

Even before World War II, the civil service commission in Britain and similar bodies in other lands were forming consultative committees of linguists to advise on textbooks and methods; and in the war the need was keenly felt for guidance as to the instruction of officers and men destined to serve in remote zones. Standard works from all the presses of the world were reproduced by photolithography as the quickest way to reach the desired end. This practice, however, resulted in no new work being undertaken.

So far as linguistics proper was concerned, the most outstanding achievement was the work done by Prof. Alexander Johannson of the Iceland university, Reykjavik, on the gesture origin of human speech. This was available in 1946 only in Icelandic, though with the co-operation and parallel researches of Sir Richard Paget, the English-reading public was soon to have an opportunity of reading the amazing results of Prof. Johannson's experimental work.

Scattered islands of activity kept up their efforts during the war years, notably Sweden and southwest China. In Sweden, Prof. Bernhard Karlgren completed his monumental Grammata Serica, a thoroughgoing examination of Chinese characters and word forms from an exhaustive analysis of ancient Chinese texts. Karlgren's output enhanced the reputation of Sweden in sinological achievement. In southwest China, the philological section of Academia Sinica continued its researches into Chinese dialects and the relation of Chinese to other members of the Siamese-Chinese family of languages. The war years did indeed make some difference to this work but it did not cease and several fine monographs attested its value.

There was considerable activity in Baltic languages. Russian dictionaries of Baltic tongues appeared; translations of Shakespeare, Sophocles and Plautus were made into Lettish and Lithuanian, as well as into Finnish and Estonian. In the U.S.S.R. the Caucasian languages (notably Georgian and its dialects) received much attention from competent scholars and the new publication Georgica printed papers of outstanding merit and importance. The new Turkish, spelled in Roman characters, produced the first complete translation of the dialogues of Plato into that language, concurrently with the Adventures of Arsène Lupin and the crime novels of Edgar Wallace.

In the countries most actively engaged in war, linguistic activity was mainly confined to the teaching of servicemen, but in classical studies brave efforts were made to keep research going. The Classical association of Great Britain held its annual meetings throughout the period. The Loeb Classical library even managed to produce several new volumes and reprint some of the more important ones which had long been out of print. Even more remarkable was the achievement in this field of study of the Guillaume Budé association of France which, throughout the German occupation, continued to issue first-class texts of Greek and Latin classics.

Throughout the war Russian linguists continued their researches into north European and Asiatic languages and in 1945-46 came the news that new Chinese, Mongolian and Yakut dictionaries were nearly ready and that first translations into Russian of some of the early Chinese philosophers (notably Kuan Tzŭ) would soon appear.

Few international conferences of philological interest could be held because of wartime travel restrictions, but the United Nations Educational, Scientific and Cultural organization had in 1946 already held a preliminary meeting of linguists and translators for the purpose of examining the possibility of making available in translation outstanding works of international cultural importance. In the summer of 1946 a conference on the teaching of eastern languages was held in Oxford. (See also Anthropology.)

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Laos

See French Colonial Empire.

Lard

The United States had a plentiful supply of lard during the early 1930s, but production declined to a low point 815

in 1935, when the per capita consumption was only 9.6 lb. compared with 14 lb. in 1932 and 1933. This decline simply reflected the decrease in hog production, since lard is a by-product of pork slaughter and varies in almost direct relation with hog numbers. As hog production increased after 1940, the lard output expanded. The shortage of all imported types of vegetable fats and oils became increasingly acute in 1941, and lard was in great demand. Military, lend-lease and civilian competition soon exhausted stocks, which fell from 186,511,000 lb. in Dec. 1941 to only 91,333,000 lb. a year later. By 1942 the production was double that of 1935, and the high record was reached in 1944, when the total was 3,215,000,000 lb. Of this total 2,034,000,000 lb. were consumed at the rate of 15.7 lb. per capita.

As the price of pork rose, the packers trimmed the pork less carefully, and the output of lard did not keep increasing at the same rate as pork production. The relative lard yield was low through 1943. In early 1944 the yield was estimated at 130 lb. of pork and 30 lb. of lard per hog. In the later months of that year the average production of lard per hog slaughtered was 35.8 lb. The supply increased from the record of 1944. Stocks were at a high point at the end of the year, amounting to 374,000,000 lb. As hog slaughter declined, the production of lard dropped through 1945 and 1946.

Production of Lard in United States, 1937–46 (In millions of pounds)

1937						1942.					
1938						1943 . 1944 .					
1940		-		٠	2,343	1945.					2,675
1941					2.281	1946 .					2,850

Government purchases of lard for lend-lease and export amounted to 326,000,000 lb. in 1941, 654,000,000 lb. in 1942, 882,000,000 lb. in 1943, and 809,000,000 lb. in 1944, then declined to 226,000,000 lb. in 1945. Large government stocks were released, and the end of lend-lease in Aug. 1945 reduced the export demand, leaving more for civilian use. The price of lard did not advance during the decade 1937-46 as did the price of butter and other cooking fats. Lard averaged 17 cents per lb. at leading cities in 1937 and advanced to 36 cents in 1946, the high point. At the same time margarine rose from 19 cents per lb. to 25 cents in 1946 and butter from 40 cents to 83 cents per lb. in 1946. The government ordered about 5% of the live-weight slaughter of hogs set aside for government purchase in 1945, and in May 1946 the percentage was increased to 6%. The increased supply was required for relief needs. World production of hogs being low, the demand for pork and lard was expected to continue high from the United Kingdom and European countries for two or three years. Lard exports were at the low total of 162,000,000 lb. in 1937, increasing to a high of 921,000,000 lb. in 1944, then dropping to 550,000,000 lb. in 1945 and declining still further in 1946. While there was complaint from civilians on the scarcity of lard after 1940, the rate of consumption was higher than the prewar 11 lb. per capita, when it reached 14.5 lb. in 1943 and 13.8 lb. in 1944. (See also Hogs; MEAT; VEGETABLE OILS and ANIMAL FATS.) (J. C. Ms.)

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Largo Caballero, Francisco

Largo Caballero (1869-1946), Spanish politician, born of poor parents, went to work at the age of ten in the

coal mines and later became a stonemason and union organizer. He was one of the revolutionary Spanish leaders responsible for the dethronement of King Alfonso XIII and the creation, in 1931, of the Spanish republic, in which he became minister of labour and later minister of public works. In 1934, a more conservative Spanish government objected to Largo Caballero's militancy and tossed him in prison, where he spent 13 months before he was tried and finally acquitted. In 1936, when Gen. Francisco Franco launched the rebellion that started the Spanish Civil War, Largo Caballero immediately joined the Spanish Republican forces and fought on the Guadarrama front. In Sept. 1936 he became the first socialist premier of the Spanish republic and concurrently held the post of minister of war. However, his militant left wing socialism did not meet with the approval of the moderates in the Popular Front coalition and he was replaced as premier in March 1937 by the less extreme Juan Negrin. Toward the close of the civil war in 1939, Largo Caballero fled across the border to France, following which he was tried in absentia and sentenced to loss of citizenship, banishment and confiscation of property.

After the collapse of France in 1940, he disappeared but turned up again in Sept. 1945, at which time he said he had been detained in a German prison camp near Nuembers.

He died in Paris, March 23, 1946.

Larynx

See Ear, Nose and Throat, Diseases of.

Laski, Harold J.

), British socialist and political scien-Laski (1893tist, was born June 30, 1893, in Manchester, Eng. He studied at New college, Oxford, and lectured at McGill university, Montreal, from 1914 to 1916, at Harvard from 1916 to 1920, and at Yale in 1919-20. He joined the faculty of the London School of Economics in 1920. Long regarded as one of the British Labour party's most lucid expounders of socialist doctrine, he became chairman of the party executive committee in 1945. During the British electoral campaign, after the end of World War II in Europe, conservative newspapers painted the socialist leader as a "deep-dyed red" and asserted that he dominated the Labour party as a "one-man brain trust." Laski, as a matter of fact, enjoyed no real power in the British Labour party; the executive committee's authority was restricted to discussion of problems, and had little influence beyond making recommendations. After Labour's victory in the elections of July 1945, Laski, who was somewhat to the Left of the party, was not always a reliable official spokesman. In June 1946, he was succeeded by Philip J. Noel-Baker as party chairman.

Among Laski's later publications were: The State in Theory and Practice (1933), American Presidency (1940), Reflections on the Revolution of Our Time (1943), and Faith, Reason and Civilization (1944).

Latex

See RUBBER.

Latin America

See Argentina; Bolivia; Brazil; British Guiana; British Honduras; Chile; Colombia; Costa Rica; Ecuador; French Colonial Empire; Guatemala; Honduras; International Law; Mexico; Nicaragua; Panama; Paraguay; Peru; Salvador, El; Surinam; Uruguay; Venezuela.

Latvia

From 1918 to 1940, Latvia was a republic, on the eastern shore of the Baltic sea, bounded on the north by Estonia, on the east by the U.S.S.R., and on the south by Lithuania. Its area comprised 25,395 sq.mi., thus making it larger than Denmark, Switzerland, or Holland. Chief towns (population figures 1935 census): Riga (cap., 385,063), Liepaja (57,098), Daugavpils (45,160), and Jelgava (34.099). According to the 1935 census the racial composition of the total population of 1,950,502 was: Lettish, 1,472,612 (75.5%); Russian, 233,366 (12%); Jewish, 93,479 (4.8%); German, 62,144 (3.2%); Polish, 48,949 (2.5%); others, 39,952 (2%). The census of 1930 gave the religious denominations of Latvia as: Lutherans, 56.6%; Roman Catholics, 23.7%; Orthodox, 8.9%; Old Believers, 4.8%; Jews, 4.9%; others, 1.1%.

President, from April 11, 1936, and prime minister from March 17, 1934, until the Russian occupation of June 16, 1940: Karlis Ulmanis. Prime ministers: August Kirchensteins (June 18, 1940–Jan. 1941); Vilis Lacis (after Jan. 1941).

The Ulmanis Regime.—By a coup d'état in May 1934, the prime minister, Dr. Karlis Ulmanis, had assumed complete power, though President A. Kviesis remained as nominal head of the state until his term of office expired in April 1936. Previous to this, the Saeima, or Latvian parliament, consisting of 100 members, had had 25 political parties, and cabinets had changed every few months.

The rule of Ulmanis from 1934 to 1940, when it was ended by the Russian invasion and annexation of Latvia, was a dictatorship, but it was authoritarian and not totalitarian. It was not dominated by an ideology as in fascist Italy, national socialist Germany or communist Russia; neither did it have a secret police on the model of the Gestapo or N.K.V.D., nor any concentration camp. But it did restrict the rights of minorities.

A decree in June 1934 prescribed Lettish as the sole written or spoken language of all state and communal services, except in districts where at least half the population had been registered in the last census as speaking a language other than Lettish.

On Jan. 1, 1936, a new decree set up state chambers of trade and of industry and commerce. This decree aimed at dissolving other economic organizations, such as the German guilds. As a result, an anti-Latvian press campaign was conducted in Germany, and on Jan. 22, 1936, the German minister called on Ulmanis, who, however, refused to recall the decree. In April 1936 was issued a decree dissolving all economic organizations other than the newly constituted state chambers of trade and of industry and commerce.

One exception was made. On grounds of being a purely cultural union, the famous Riga Gewerbeverein was not affected by the decree.

The new political organization of the state was on a corporative basis working through two supreme councils, the state economic council and the state cultural council. In theory these councils were to consist of members delegated to them by the five professional chambers of commerce and industry, of agriculture, of labour, of artisans and craftsmen and of letters and arts.

The Munich agreement of 1938 was felt by most people of Latvia to be a menace to the independence of their country. Opinion varied as to whether Russia or Germany would annex Latvia. Although not known at the time, the

ltem	Lo	ıtv	ia:	. 5	itai	tist	ical Data, 1938 Value (000's omitted)	Amount or Number
Exchange rate United States								1 Lat = 20 cents
Great Britain	•	•	•	•	•	•		25.22 ½ Lats =£1
Finance	•	•	•	٠	٠	•		25,22/2 2415 201
Govt. revenues							\$37,736 (£7,719)	
Goyt. expenditures					٠		\$34,757 (£7,109) \$15,284 (£3,126)	
		٠			٠		\$15,284 (£3,126)	
_ Natl. debt		•	٠	•	٠	•	\$31,319 (£6,406)	
Transportation								0.040
Railroads	٠	•	٠	•	٠	•		2,043 mi. 2,617 mi.
Highways		٠	•	•	•	•		2,775 mi.
Communication	•	•	•	•	٠	•		2,775 1111.
Telephones								70,524
Telegraph lines								2,223 mi.
Radio sets						٠		118,269
Crops								
Clover		٠	٠	٠	•	٠		2,006,373 tons
Potatoes		٠	٠	٠	٠	٠		1,930,524 "
Oats	٠	٠	٠	٠	٠	٠		492,309 "
Rye	•	٠	•	٠	•	٠		417,430 "
Livestock Poultry								5,140,920
Sheep	:	:	:	:	:	:		1,360,460
Cattle	:							1,224,350
Swine								813,500
Forest products								
Total		٠		•			\$6,249 (£1,278)	• • • •
Timber			•	٠		٠	\$5,676 (£1,161)	·
Firewood	•	•	•	٠	٠	٠	\$571 (£117)	• • •
Sea products								15272 4
Total	•	•	•	•	•	٠		7712 "
Cod	:	:	:	:	:	:		15,372 tons 7,712 " 3,716 "
Flounder and turbot	:	:	:	:	:			2,518 "
Manufactures								
Total							\$139,002 (£28,432)	• • •
Food				٠		٠	\$31,604 (£6,464)	• • •
Wood and paper			٠	٠	٠	•	\$22,284 (£4,558)	• • •
		٠	٠	٠	•	٠	\$18,694 (£3,824)	• • •
Exports—total						٠	\$45,441 (£9,295)	24 000 1
	•					•	\$10,853 (£2,220) \$6,337 (£1,296)	26,000 tons
	:	:				:	\$4,057 (£830)	349,000 " 58,000 "
Flax						:	\$3,348 (£685)	12,000 "
Imports—total						:	\$45,467 (£9,300)	1,362,000 "
Industrial machinery							\$3.817 (£781)	5.000 "
							\$3,698 (<i>£75</i> 6)	669,000 "
							\$1,461 (£299)	828 "
Wrought iron	-		•	٠	•		\$1,374 (£281)	26,000 "
Defense								0.5.000
Standing army personnel					-	٠		25,200
Reserves					٠	٠		205,000 335
Standing air force person				•	•	٠	\$8,286 (£1,695)	333
Military expenditures	•	•	•	•	•	٠	40,200 (2,1,090)	
	_					-		1.904
Elementary schools			:	:	:	:	•	1,904 230,533
Education Elementary schools Students Secondary schools			:	:	:	:	•	1,904 230,533 114

late of Latvia was decided in Moscow in 1939. The secret additional protocol to the German-Soviet non-aggression pact of Aug. 23, 1939, contained in clause 1 the words: "In the event of a territorial and political transformation of the areas belonging to the Baltic states (Finland, Estonia, Latvia and Lithuania) the northern frontier of Lithuania will automatically be established as the boundary of the spheres of interest of Germany and the U.S.S.R." The document was signed by Joachim von Ribbentrop and Vyacheslav M. Molotov.

A treaty of mutual assistance with the U.S.S.R. was concluded on Oct. 5, 1939, after the Latvian foreign minister, Vilhelms Munters, had been summoned to Moscow in a manner not dissimilar from Hitlerian tactics with dependent states. The treaty provided for soviet military and naval bases in strategic points in Latvia, garrisoned by Russian troops, equivalent in strength to the Latvian standing army. The mutual assistance treaty, however, contained a solemn promise by Russia that the political and economic structure of Latvia would not be endangered. This was also promised by Stalin personally to the Latvian foreign minister.

Toward the end of 1939 Hitler ordered the German minority in Latvia to proceed to Germany and ships were sent to Riga to transport them.

Some 60,000 left and by the spring of 1940 few Germans remained in the country.

Disappearance.—The Red army invaded and occupied Latvia on June 16, 1940. With them arrived in Riga Andrei Y. Vishinsky, soviet deputy commissar for foreign affairs, whose mission was to supervise the political transformation. In July of the same year an "election" of the type which later became standard in most Russlan-occupied territories was held. Only one party, the Communist, was allowed to present candidates. Though it had been maintained that the new regime would act on the basis of the 1922 constitution, the new "parliament" in its first session passed a resolution for the incorporation of Latvia in the soviet union. Ulmanis disappeared without trace, though rumour said that he was in captivity in a small town in the Caucasus.

Toward the end of July 1940, the soviet union informed all foreign legations and consulates in Latvia that they were to terminate their activities and leave the country by Aug. 15, 1940. This was done. After that date information about Latvia could not be collected in the usual manner. It was based on reports of people who had fled from German or Russian occupation. Occasionally Russian or German official statements would throw some light on events in Latvia.

In Jan. 1941 "elections" were held for the supreme soviet of Latvia. A few Latvians were retained as figureheads, but all the key points were filled by persons sent from Russia. August Kirchensteins became chairman of the supreme soviet of Latvia. A bacteriologist, Kirchensteins was the same man whom the Russians had chosen as their quisling. He was the man who became "prime minister of Latvia" after the Russian invasion in June 1940. The "prime minister" of the soviet regime was Vilis Lacis, an author of stories of adventure. For most people in Latvia, the main feature of the regime introduced and supported by the U.S.S.R. was the rule of the Russian secret political police—the N.K.V.D.

Large numbers of Latvians of all classes were arrested and deported to Siberia, the Komi and the region of the Caspian sea, where they were held in concentration camps or employed as slave labour in the salt mines, the north Russian forests or on Siberian collective farms, as well as in road and canal building in the Leningrad area. A list of 34,250 names of Latvian deportees was placed in the files of the International Red Cross in Geneva. Executions registered during the first 12 months of Russian rule in Latvia—to June 1941—numbered 1,450.

The Germans invaded Latvia in 1941 and occupied the country until driven out by the Russians in 1943 and 1944. Under German occupation Latvia was incorporated in the economic system of Germany. The Jews were massacred by the Germans in the same bestial manner as in other parts of eastern Europe.

Fresh executions and deportations followed in the second Russian occupation of Latvia in 1944. Little news filtered through, but such as did indicated that Latvia was being absorbed into the U.S.S.R.

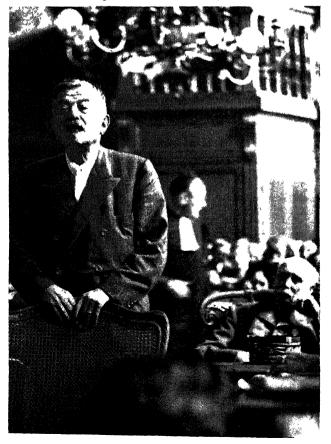
But the incorporation of Latvia in the U.S.S.R. had been officially recognized only by Germany, Finland and Sweden.
(H. F. An.)

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Laval, Pierre

Laval (1883-1945), French politician, was born on June 28, 1883, at Châteldon, Puy-de-Dôme. A successful lawyer, he was elected to the chamber of deputies in 1914 and to the senate in 1926. He was premier and foreign minister in 1931-32 and again premier from June 1935 to Jan. 1936. In this latter period he negotiated the muchdenounced Laval-Hoare agreement sanctioning the Italian conquest of Ethiopia. After Laval's resignation in Jan. 1936 he remained in the political background until, following France's collapse in 1940, Marshal Pétain named him his successor as well as vice-premier. Never a staunch believer in democratic rule, Laval became openly anti-Allied and pro-axis in sentiment and speech and conferred on several occasions with Hitler in 1940. A sudden rift between Pétain and Laval occurred, however, and the latter was dropped from the cabinet, Dec. 13, 1940. He was reinstated with Hitler's help on April 18, 1942, and formed a new cabinet, assuming the title of chief of government. Thereafter, Laval followed an outright pro-nazi policy. On Nov. 18, 1942, a week after Hitler had occupied all France, Pétain vested in Laval dictatorial powers to make laws and decrees on his own responsibility. Laval instigated the conscription of French labour for German factories in 1949, an action which intensified the bitter hatred for him in France. After the success of the Allied invasion of the continent was assured, he fled to Germany in Aug. 1944. He stayed in the reich until May 2, 1945, five days before Germany's surrender, when he fled to Barcelona in a German plane. He was interned in a fortress prison near Barcelona

Pierre Laval testifying as defense witness for Marshal Pétain (seated right). Convicted of intelligence with the enemy on Aug. 15, 1945, Pétain was condemned to death, but the sentence was later commuted to life imprisonment. Laval was subsequently tried on similar charges and executed Oct. 15, 1945



but was later ordered to leave the country. Laval then flew to Salzburg, Austria, where he surrendered, July 31, to U.S. army forces. He was then transported to Paris for trial. During the trial of Marshal Pétain, at which he was called upon to testify, Laval admitted that he had expressed "hope for a German victory" in a broadcast to the French people in June 1942. During his own trial which opened the following Oct. 4, Laval pleaded his case with great skill and clever showmanship, but after five days the Paris high court of justice convicted him of plotting against the state and intelligence with the enemy, and sentenced him to death. On the day he was notified that he was to be shot by a firing squad, Laval attempted suicide. He was revived by physicians, however, and led out to his execution, on Oct. 15, 1945.

Law

The decade 1937-46 was spectacular for the growth in number, size and power of U.S. administrative agencies, the vast extension of federal controls over the nation's economic life, the new approach of the majority of U.S. supreme court justices toward the solution of constitutional problems and their readiness to scuttle long-established precedents. The cumulative effect was little short of a legal revolution.

Such a revolution was necessary to provide the framework for the social and economic controls projected by President Franklin D. Roosevelt when he first took office. His promise of a new deal took shape and found expression in the legislative program adopted during his first term (1933–37). This program included relief to farmers, workers and home owners. It met strong opposition, however, from the conservative majority of justices of the U.S. supreme court who threatened the very foundations of the Roosevelt reforms with decisions knocking out the National Industrial Recovery act, the major part of the Agricultural Adjustment act of 1933, the Frazier-Lemke act of 1933, the Bituminous Coal act of 1935 and other New Deal laws.

In a determined effort to save what was left of his program, the president proposed to reorganize the supreme court under a plan calling for the voluntary retirement of justices at the age of 70 on full pay and the appointment of an additional justice for every eligible justice who failed to take advantage of his privilege to retire, the total membership of the court, however, never to exceed 15. This plan was denounced as a court-packing device and failed to get the support of congress. But the deaths and resignations of some of the conservative justices enabled the president to achieve the same objective by replacing them with liberals.

The shift in the balance of power from a conservative to a liberal majority commenced in Aug. 1937 and was completed in July 1941. In the space of four years the president had been able to appoint a total of seven justices, and the New Deal, which had shown signs of faltering, became an accomplished fact. One by one the supporting statutes were approved by the court as constitutional. A new Agricultural Adjustment act, a new Bituminous Coal act, a new Frazier-Lemke act and other laws enacted to patch up some of the holes blasted by the pre-New Deal court, were given the new supreme court's blessing. But no attempt was made to revive the NIRA.

This legal revolution had been long in the making. Increasing urban congestion, advances in science and invention, concentration of industrial and financial power and the growth of labour organizations, created new relationships, tensions and conflicts requiring regulatory and re-

medial laws. The hardships of the depression years (beginning in 1929) had stimulated public demand for social security, wage and hour controls and other reforms. This demand found sympathetic response in the law schools, whose faculties and students had for some time been preoccupied with the challenge presented to the legal profession by the increasing complexity of modern life. Law teaching in many of the schools had already shifted its emphasis from traditional common-law principles and precedents to approaches variously designated as realistic, rationalistic and functional. Controversies raged in law reviews over the nature of law, its relationship to social forces and the role of the courts. The end sought was pragmatic: to devise such legal controls as were socially necessary and desirable and to make them work.

President Roosevelt drew heavily upon young lawyers, conditioned to this approach, as technicians to improvise the legislation needed to carry out his program. The consequent creation of new administrative agencies with unprecedented powers and their incorporation into the federal system with the approval of the supreme court would have been enough to distinguish any decade as unique in legal history. This, however, was only the first phase in the development of public law. The need for mobilizing the national resources to prepare against the threat of nazi and fascist aggression brought a mass of defense and war emergency measures and a second group of agencies endowed with even greater powers of regulation; and finally, the end of World War II initiated the era of reconversion marked by the closing out of many war agencies and the enactment of a third group of public laws and administrative agencies to control the change-over to peacetime conditions. The development of public law in the several states in varying degrees followed much the same pattern. (See under sections Administrative Law, War Powers and Controls and Reconversion, of this article, below.)

There were no startling changes in the principles of private law. Trends in this field were principally toward (1) providing new remedies for old and new types of wrongs, (2) the increased use of arbitration, (3) improvements in court procedure and administration and (4) the simplification and unification of state laws.

By the passage of the Tort Claims act of 1946, congress at last made it possible to sue and recover from the federal government for the negligent or wrongful acts or omissions of its agents or employees. Compensation for such claims could formerly be obtained only through special appropriations by congress. New legal problems arising out of the growth of radio and aviation were met by legislation and court decisions. Thus the area of the law of defamation was broadened to include slander by radio, and old rules as to damage to persons and property were applied to damage by aeroplanes. A definite shift of emphasis was also discernible in negligence cases from the strict view that contributory negligence bars recovery to a newer doctrine of comparative negligence.

Arbitration achieved wide acceptance as a desirable method of settling commercial and industrial disputes without court proceedings. It was applied as a technique for adjusting labour controversies, conflicting patent claims, admiralty questions and many other conflicts. The arbitrational process as a rule proved speedier, cheaper and more satisfactory to the participants than litigation. The courts generally declined to review the findings of arbitrators chosen by the parties under a valid agreement. Many states enacted statutes for the regulation of arbitration,

and under the national Contract Settlement act of 1944 it was made available to contractors as an alternative to court proceedings in adjusting claims against the federal government.

Procedure in the federal courts was completely revamped through the adoption of uniform rules both for civil and criminal actions to apply throughout the United States. Previously there had been uniformity only in equity and admiralty practice. Federal procedure in common-law actions had been as varied as that of the 48 states, since it was required to conform to the rules of the state courts in each district.

Federal criminal procedure also varied widely in the different districts. In 1938, however, the supreme court, pursuant to authority granted by congress, adopted new rules governing civil procedure in all district courts. These rules abolished distinctions between law and equity actions, substituted a single motion for demurrers and various pleas, granted flexible powers of discovery, permitted wide latitude in the joinder of parties and causes of action and provided pretrial procedure for the elimination of uncontested issues and facilitation of settlements. The supreme court also adopted new rules of criminal procedure (see Criminal Law, below). Further progress was achieved through the creation by congress of the administrative office of the U.S. courts charged with attending to the business needs of the federal judicial system and making recommendations for its more speedy and efficient opera-

The movement for simplification and unification of state laws also gained ground. The national conference of Commissioners on Uniform State Laws completed, 25, or more uniform and model state laws, which were promulgated with varying degrees of success. In 1944 the American Law institute completed its 19-volume restatement of the law, begun in 1923, intended to express existing common law with such clarity and precision that it would be accepted by courts throughout the nation as correct. The restatement covered agency, contracts, property, torts, trusts and other basic subjects of the common law. With the completion of this work, the institute turned to a new project: the production of a uniform commercial code, in co-operation with the Commissioners on Uniform State Laws. Some lawyers considered it significant that an organization which had devoted 21 years to a restatement of case-law principles should join in what was essentially a movement for codification. The gradual conversion of U.S. common law into a semblance of the civil or code law system (as exemplified in France) seemed to them probable.

The decline in the importance of judge-made law was further indicated by the tendency of the supreme court of the United States to overrule prior decisions and depart from established principles. Parallel with this retreat from the doctrine of *stare decisis* (to stand by decisions) ran the tendency of the supreme court to broaden the powers of administrative agencies and to refuse to review their findings unless convinced that they were based on errors of law rather than fact.

These trends apparently stemmed from the inclination of a majority of the justices to apply social rather than technical legal criteria in determining the extent of legislative, executive and administrative powers and in resolving conflicts between government departments, state and federal, and between government and private interests. This approach was particularly noticeable in the construction of statutes. The more liberal justices interpreted

legislative acts in the light of the social ends they believed the legislators intended. But critics of this point of view asserted that the court read into some statutes meanings which the framers never entertained and which could not be reasonably deduced from the statutory context.

With the war's end, public interest focused sharply on international legal developments. The mass trial of nazi leaders before a four-nation tribunal at Nuernburg established a new type of court and a new application of existing principles of law. For the first time in history high military and political officials of a defeated nation were convicted by an international court of crimes against world peace and against humanity.

Through congressional action, the United States became a member of the International Monetary fund and International Bank for Reconstruction and Development, contributed heavily to the United Nations Relief and Rehabilitation administration, extended the Reciprocal Trade Agreements act, joined the United Nations, its Educational, Scientific and Cultural organization (U.N.E.S.C.O.), and its Food and Agriculture organization (F.A.O.). Proposals for international control of atomic energy were debated but not acted upon. In the United States, however, the development and control of atomic energy were assigned to a five-man civilian commission under the Atomic Energy act of 1946 against the protests of proponents of military control, but a liaison committee was created to co-operate with the army and navy departments. The new law reserved to the federal government exclusive control over the production, ownership and use of fissionable material and provided the death penalty for disclosure of secrets in that field.

The decade closed upon a legal scene little less complex than during the height of war activity. The first functioning of reconversion laws brought the termination of many war agencies and a general shifting and realignment of the functions of those which remained. Administrative agencies and the courts were confronted with new problems of job reinstatement for veterans, surplus property disposal, housing and tax readjustment, but the dominant and most difficult issue arose in the field of labour-management relations. The rapid decontrol of prices and rationing set off the long-expected upward spiral of prices and wage demands, resulting in strike tie-ups of essential industries affecting the entire national economy and evoking demands for statutory machinery for the compulsory arbitration of labour disputes.

The production of legal literature during the decade in the form of statutes, executive orders, agency regulations and rulings, local ordinances, court reports, digests, cyclopaedias, textbooks and commentaries, ran to an incalculable total of many thousands of volumes and millions of words.

Administrative Law.—Administrative law expanded to an astounding bulk and complexity. Numerous new agencies, created during the first phase of the New Deal, had become an integral part of the governmental machine before President Roosevelt's second inauguration. By the end of 1937 the supreme court had approved the legislation establishing such major agencies as the Social Security board and the National Labor Relations board. After a short interval, during which the depression-born agencies were achieving a precocious maturity, a new group of bureaus was set up by statute and executive order to regulate and direct the national economy toward preparation for defense against war and finally for the prosecution of war itself. Under the hands of the president agencies sprouted, grew, branched, flowered and died with the speed of the

stage magician's orange tree. Other bureaus pushed up to replace them. Branches were lopped off and grafted on the trunks of almost unrelated departments. The history of the making, unmaking and shifting of agencies during the decade would require a sizable volume.

These new instruments of government, whether for permanent or emergency purposes, were built to a similar pattern. Congress gave them rather broad powers, often including prosecutory and judicial functions to be exercised under rules and regulations devised by the agencies themselves. Their controls were reinforced by publicity, the granting and withholding of benefits and enforcement machinery operating through criminal prosecutions and civil damage suits. Rather drastic limitations were placed by some statutes on the right to a court review of administrative decisions.

These developments were disquieting to lawyers and business men reared on the constitutional doctrine of the separation of governmental powers and traditional concepts of "due process." Equally disquieting was the unprecedented production of administrative orders, rules, regulations and decisions. By comparison with this jungle, the common law's "wilderness of single instances" looked like a well-kept grove.

The American Bar association took the lead in trying to bring the exuberant growth of administrative law under statutory control. It advocated the revision and unification of federal administrative procedures in the direction of divorcing the prosecutory from the judicial functions and increasing the latitude of judicial review of agency rulings. President Roosevelt also seemed to recognize the dangers of an uncontrolled expansion of administrative powers even though he had been chiefly instrumental in stimulating the process. In 1937 he transmitted to congress the report of a special committee which advocated the division of federal agencies into administrative and judicial sections. In commenting on the report, the president warned against the development of a "fourth branch" of the government not authorized by the constitution.

The demand for reform resulted in the passage of administrative procedure acts in North Dakota, Wisconsin, North Carolina, Ohio and California. But similar measures presented to congress were sidetracked because of the urgency of defense and war activities. The authority and powers of federal agencies, instead of being checked, were substantially increased. The flood of peacetime rules and regulations became a cloudburst of orders relating to priorities, prices, rents, production, rationing, manpower, selective service and governmental contracts. With the end of the war, however, the fight for over-all regulation of federal agencies was revived. It resulted in the enactment of the much-debated McCarran-Sumners bill, which in its final form became the Administrative Procedure act of 1946. The new law (1) provided that agencies should issue as rules certain specified information concerning their organization and procedure, (2) laid down the essentials of several forms of administrative proceedings and the limitations on administrative powers, (3) provided in more detail the requirements for administrative hearings and decisions where such hearings were required by statute, (4) assured a remedy by judicial review for every legal wrong due to agency action except so far as statutes precluded such review or the action was within the scope of agency's legal discretion and (5) set up a system of semi-independent trial examiners recruited under civil service to preside over hearings. The act also extended to all agencies the requirement of internal separation of functions between investigating and prosecuting officers and hearing or deciding officers.

The Administrative Procedure act made no attempt, however, to codify administrative law or change its basic principles. Those principles had been fairly well worked out by the courts prior to 1937. During the decade that followed there was a strong trend toward sustaining the powers delegated to agencies by legislative bodies and giving finality to agency findings. The supreme court in general approved the rule-making and fact-finding powers of federal agencies whenever it appeared that congress had prescribed adequate standards for determining the occasions for the exercise of such authority. Thus the court found that the standards laid down under the price control and wage-hour acts were sufficiently precise to justify most of the activities of the administrators appointed to enforce those laws, including the right of government agents to enter business places and seize ration books, permits and other government-issued papers without a search

But the powers exercised by agencies were limited to those actually delegated by statute. Agency hearings were required to conform both to the letter and spirit of the statutory authority granted. The supreme court ruled that the price administrator did not have an absolute right to the issuance of injunctions restraining future violations of price ceilings; that the price administrator's status in public utility rate hearings was restricted to showing the probable inflationary effect of proposed rate increases; that the wage and hour administrator had no right to issue regulations determining the extent of his own authority; that the social security board exceeded its authority in refusing to classify back pay as wages; and that the postmaster general exceeded his powers in withholding second-class privileges from a magazine because he disapproved of its contents on moral grounds.

Participants in agency hearings found that it was more important to obtain favourable results before the agency than to rely on judicial review. Such review could not be had until all administrative remedies had been exhausted; and even when an appeal was properly brought, the courts were disinclined to interfere with administrative findings unless there had been lack of authority in the agency or a decision was based on arbitrary action. The supreme court refused to disturb orders of the Federal Power commission, the Federal Security administrator, the National Labor Relations board and the Interstate Commerce commission based on findings of fact arrived at after consideration of carefully accumulated evidence, much of it highly technical in character. The court took the view that administrative tribunals had special experience and expertness in their respective fields which should not be supplanted by the less specialized knowledge of a reviewing court.

The court at the same time somewhat enlarged the scope of judicial review, holding that it could include consideration of "negative" as well as "affirmative" orders of commissions. But orders could not be sustained merely on "broad equitable principles." Nor would the court give finality to administrative decisions where it appeared that there had not been a fair hearing.

The Reorganization act of 1945 directed the president to examine the organization of all agencies and to submit plans to congress for greater efficiency in the operation of government through the transfer, co-ordination, consolidation and abolition of agencies. Pursuant to this act the president in 1946 submitted recommendations to congress

Congress also planned its own remodelling through the Reorganization act of 1946, which provided for the merger of 33 senate committees into 15 and 48 house committees into 19. A new joint committee of both houses on national defense would replace their respective committees on military and naval affairs. The taxing and appropriation committees of heavest rore also required to meet jointly

for the realignment of various agencies and their functions.

tary and naval affairs. The taxing and appropriation committees of both houses were also required to meet jointly at the opening of each session of congress for the purpose of balancing expenditures against revenues. Salaries of senators and representatives were raised from \$10,000 to \$12,500 a year, and they were allowed \$2,500 for annual

expenses.

Agriculture.—The federal program of aid to farmers, begun in 1933 with a series of laws granting subsidies through parity payments, establishing control of prices and quotas for production, promoting rural electrification, extending credit and providing other relief, was reinforced and elaborated by new legislation. This included the Agricultural Marketing Agreement act (1937) for the arbitration of disputes concerning the marketing of milk and milk products, the Sugar act (1937) for the control of the production of sugar, the new Agricultural Adjustment act of 1938, for the adjustment of freight rates on farm products, fixing marketing quotas, making loans and parity payments, the Crop Insurance act (1938) to alleviate distress caused by crop failures, the Seed act (1939) regulating interstate commerce in seeds, the Agricultural Research act (1946) and other enactments extending the life of certain agencies, providing appropriations for their support and amending and extending various regulatory devices.

The U.S. supreme court in general sustained federal legislation giving government agencies control over agricultural production and prices and disapproved state laws in the same field insofar as they interfered with the exercise of the commerce powers of congress. Certain aspects of state laws aimed at the control of marketing, such as the Michigan Milk Marketing act, Utah Milk Control act and Florida's Grower's Cost Guarantee law, were knocked out by state reviewing courts. (See Agriculture.)

Aliens and Citizenship.—Congress struck at foreign propagandists with the passage of the Foreign Agents Registration act of 1938 (amended in 1942), requiring all agents of foreign governments and foreign principals to register with the attorney general, to label all political propaganda sent through the mails, to file copies thereof in the Library of Congress and to keep records open to inspection. The 1941 conviction of the pro-nazi propagandist, George Sylvester Viereck, for violating this act, was reversed by the supreme court, but the court declined to review his second conviction.

Further precautions against espionage and sabotage were taken through the passage of the Alien Registration act of 1940, which ordered the registration and fingerprinting of all aliens. The Nationality act of 1940 codified all laws relating to citizenship, naturalization and expatriation and amended prior provisions concerning national defense and subversive activities. Later enactments tightened the controls on immigration, strengthened the deportation laws, extended special naturalization privileges to aliens who served in the U.S. army, navy, marine corps or coast guard, and provided for the loss of citizenship by naturalized citizens through extended residence in a foreign country or other acts indicating expatriation.

Early in 1942 the attorney general began a campaign to cancel the citizenship of disloyal naturalized citizens, which

resulted in more than 40 denaturalizations before the year's end. The supreme court, however, applied brakes to this procedure in two important decisions. The court set aside the cancellation of a naturalization certificate granted in 1927 to an admitted Communist on the ground that the government had not proved with requisite certainty that the attitude of the Communist party at the time when the petitioner was naturalized created a "clear and present danger of public disorder." The facts and the law should be construed as far as reasonably possible in favour of citizenship (Schneiderman v. U.S., 320 U.S. 118 [1943]). The court applied the same test to an alleged nazi follower, holding that a naturalized citizen was entitled to the same degree of freedom of speech as one native-born (Baumgartner v. U.S., 322 U.S. 665 [1944]). But in 1946 a majority of the justices approved the denaturalization of a defendant who had obtained citizenship on the basis of a false oath of allegiance to the United States when in fact he was a thoroughgoing nazi and Hitlerite (Knauer v. U.S., 66 S. Ct. 1304 [1946]). On the other hand, the court held that an applicant for citizenship need not pledge himself to bear arms in defense of the United States, if he was otherwise qualified (Girouard v. U.S., 66 S. Ct. 826 [1946]). The court thereby overruled its 15 year-old decisions in the Schwimmer, Macintosh and Bland cases.

The supreme court also extended the rights of freedom of speech and of the press to aliens in a 5 to 3 decision quashing the order of Attorney General Francis Biddle for the deportation of Harry Bridges, west coast Congress of Industrial Organizations leader. Utterances and activities amounting to mere co-operation with the Communist party did not constitute such "affiliation with" a subversive organization as to render an alien deportable (Bridges v. Wixon, 326 U.S. 135 [1945]).

A series of executive orders (1941-42) subjected enemy aliens to surveillance, forbade them to travel without permission and ordered them to turn over to the U.S. marshal all radio transmitters, short-wave sets, cameras and firearms. Certain areas were designated as closed to enemy aliens. A curfew order issued by the western defense command requiring persons of Japanese ancestry to remain at home between 8 P.M. and 6 A.M. was held by the supreme court to be properly applied to U.S. citizens of Japanese descent (Hirabayashi v. U.S., 320 U.S. 81 [1943]). The court also upheld the removal of persons of Japanese ancestry (even though American-born citizens) from west coast areas and their relocation in internment camps as reasonably necessary to prevent espionage and sabotage in view of the danger of invasion at the time of the order (Korematsu v. U.S., 323 U.S. 214 [1944]). But in a second case the court ordered the release of a Japanese-American woman from a relocation centre because of her admitted loyalty. The power of detention was justified only as a protection against espionage and sabotage (Ex parte Endo, 323 U.S. 283 [1944]).

On Feb. 8, 1944, the president by proclamation fixed the annual immigration quota for Chinese at 105 to comply with an act of congress (Dec. 17, 1943) which repealed the Chinese exclusion laws and extended the privilege of naturalization to persons of Chinese descent. Persons of races indigenous to India and the Philippines were made eligible for admission to the United States and for naturalization by act of congress in 1946. (See also ALIENS.)

Bankruptcy.—The first thorough revision of federal insolvency laws in 40 years was achieved through the Chandler act of 1938. It was designed to streamline bankruptcy law by giving referees greater powers, speeding up and simplifying procedure, clarifying the powers and jurisdic-

tion of federal and state courts, broadening the benefits of reorganization and debtor-relief provisions and increasing the opportunity for creditor control and supervision. The new bankruptcy code included the provisions of the Frazier-Lemke act and the Municipal Bankruptcy act. The first versions of these two laws had been found unconstitutional by the supreme court. But the Frazier-Lemke act, as revised and re-enacted in 1935, was ruled valid in 1937 (Wright v. Vinton Branch, 300 U.S. 440). Relief was thereby given to farmer debtors through composition, extension and redemption procedures. The Municipal Bankruptcy act, patched up by congress in 1937 to meet high court objections, provided for the readjustment of the debts of local taxing bodies. It was held valid in 1938 (U.S. v. Bekins, 304 U.S. 27).

Many phases of the complex bankruptcy structure, too technical to report here, were construed by the federal courts.

Business Regulation.—Governmental regulation of business developed enormously: first, under the continued impetus of the New Deal program, and secondly, under the mobilization of the nation's resources and energies for defense and war purposes. The latter phase is reported later in this article under War Powers and Controls.

Peacetime regulation was directed toward achieving a reasonable balance among conflicting forces in a competitive economy by providing controls against monopoly and unfair practices while leaving business as free as was compatible with public interest. This effort involved problems of encouraging invention by granting monopoly rights under the patent laws and at the same time curbing the abuse of such rights; of safeguarding investors without too greatly restricting business enterprise; of limiting competition in the public utility, transportation and communication fields for the sake of economy and efficiency while keeping a check on the concentration of power through control of franchises and rate-making; of protecting business against ruinous price cutting without sanctioning price fixing; of encouraging farm production through subsidies and price guaranties without placing unfair burdens on consumers and taxpayers; and of permitting reasonable latitude in promoting the sale of merchandise while forbidding deceptive advertising and misbranding.

Antitrust.—The greatest trust-busting campaign since the passage of the Sherman act was opened in 1937 with a blast from Attorney General Robert H. Jackson against the supreme court's leniency in antitrust cases. This was followed by recommendations from President Roosevelt in his 1938 message to congress for strengthening antitrust procedures and revising the patent laws. Government forces realized that they faced a difficult task in trying to break up combinations entrenched behind intricate patent licensing agreements. The situation was further complicated by the Miller-Tydings act of 1937 which legalized vertical resale price maintenance agreements affecting interstate commerce, when they did not violate the laws of the state of resale.

The antitrust drive was assigned to the direction of Assistant Attorney General Thurman Arnold, who proceeded to enforce the laws against monopolies with marked success. The president sought to strengthen the government's hand through the appointment of the Temporary National Economic committee, which investigated the monopoly problem in 1939 and 1940 and reported its findings in 43 monographs, recommending the vigorous enforcement of antitrust laws, drastic changes in the patent structure, repeal of the Miller-Tydings act and other action. But most of the TNEC proposals were sidetracked

because of the growing need by the government for the full co-operation of industry in defense and war production. The attorney general agreed not to press any antitrust suits which the secretaries of war and navy believed would impede the war effort. At the same time congress preserved the government's right to reopen such cases by suspending operation of the statute of limitations until June 30, 1945. This arrangement narrowed the battle front but did not end the fight against monopoly. The antitrust division proceeded rapidly to cut away all entanglements between domestic industries and nazi-controlled cartels, especially in such industries as chemicals, dyes and medical supplies. This was accomplished mostly through consent decrees by which defendants avoided prosecution by agreeing to the entry of court orders forbidding the continuance of objectionable practices.

The campaign continued also against domestic monopolies not engaged in war production. The government followed the Louis Brandeis formula in its preparation of cases, gathering and presenting an overwhelming mass of facts to support a particular prosecution. Thus the suit for dissolution of the aluminum trust required a three-year hearing resulting in 40,000 pages of testimony. The government thereby proved a monopoly by the defendants through their control of 90% of the aluminum ingot market, and the circuit court directed that a decree be entered restraining "price-squeeze" practices, but it declined to dissolve Alcoa (Aluminum Company of America) because of a possible adverse effect on war production.

The court sustained a decree against a group of companies operating motion picture theatres in 70 southern towns for violating the Sherman act by combining their film buying power to drive independent exhibitors out of business (U.S. v. Crescent Co., 323 U.S. 173 [1944]); affirmed a judgment of \$360,000 against 9 film companies for violating the Sherman act through use of the block booking system of distributing films (Bigelow v. RKO, 66 S. Ct. 574 [1946]); and approved fines totalling \$250,000 against 3 big tobacco companies for violating the Sherman act through a price monopoly on leaf tobacco and tobacco products. In the latter case the court held that there was a violation even though competition was not completely barred (Am. Tobacco Co. v. U.S., 66 S. Ct. 1125).

In three cases the application of the antitrust laws was extended into new fields. In a 4 to 3 decision of great impact, the supreme court upheld a Georgia indictment of 198 stock fire insurance companies and 27 individuals for conspiring to violate the Sherman Anti-trust act by fixing premium rates and agents' commissions and forcing nonmember companies and independent agencies into line through boycotts and intimidation. In earlier cases, which did not involve the Sherman act, the court had expressed the view that "issuance of a policy of insurance is not a transaction of commerce." Now, however, the court ruled that the insurance business was in fact one of the largest and most important branches of interstate commerce (U.S. v. South-Eastern Underwriters, 322 U.S. 533). As a sequel congress passed a moratorium act providing that until Jan. 1, 1948, the Sherman and Clayton acts would not be applicable to the insurance business.

The court also held that boycott practices by two medical societies which obstructed the business of a nonprofit corporation devoted to providing medical care and hospitalization to government employees were violations of the Sherman act (American Medical Association v. U.S., 317 U.S. 519 [1943]).

A third important extension of the Sherman act was the court's 5 to 3 ruling that the collection and distribution of news was interstate commerce subject to federal control. The Associated Press, a co-operative association of more than 1,200 newspaper publishers, was directed to revise certain by-laws which had operated in restraint of trade. The freedom of the press guaranteed by the first amendment, said the court, did not include "freedom to continue to keep others from publishing." (A.P. v. U.S., 65 S. Ct. 1416).

The antitrust division launched a special drive against restraints of trade based on the misuse of patent rights. Following leads provided by the TNEC, the government in Dec. 1939 filed suit to break up monopolies in the glass container industry. Within a period of a little more than 5 years, a total of 56 actions was brought to outlaw devices through which patents had been used to restrict competition. This was more than twice as many cases as the government had started during the preceding 27 years.

The trial of the glass container case lasted 112 days and resulted in a decree of 46 printed pages in which the lower court made 628 findings of fact and 89 conclusions of law based on a printed record of 16,500 pages. The defendants, including all the major companies in the industry, their officers and a trade association, were found to control more than 840 patents for glassmaking machinery. Provisions of the decree directing them to license all applicants to manufacture and use the patented machinery at uniform reasonable royalty rates were approved by the supreme court, but more drastic provisions, which would in effect have divested them of all benefits from their patents, were set aside (Hartford-Empire Co. v. U.S., 65 S. Ct. 815).

The department of justice uncovered an extraordinary variety of devices by which patents were used to divide markets into noncompetitive areas, establish price-fixing schemes, limit production and quality, control supplies and parts relating to patented articles, enforce tie-in agreements and restrict competition through patent pooling, cross-licensing and blocking off and fencing in competitors. Some of these practices were terminated in some industries through consent decrees, but a large number of cases were fought through to the U.S. supreme court. The resulting decisions drastically limited the power of patentees to control the prices of patented articles through licensing agreements.

Fair Trade Laws.—The antitrust laws were amended in 1936 by the Robinson-Patman act and in 1937 by the Miller-Tydings act. Both laws were directed against unfair trade practices.

The Robinson-Patman act prohibited price discrimination through the improper use of discounts, commissions, rebates and advertising allowances. Its administration was assigned to the federal trade commission which applied the law by outlawing various discriminatory devices known as "basing-point systems," "delivered-price marketing" and "zone pricing." Federal Trade Commission rulings in this respect were generally upheld by the courts.

The Miller-Tydings act legalized vertical price maintenance agreements affecting interstate commerce whenever such agreements were valid under the laws of the state of resale. Vertical agreements are those made in the direct line from production to distribution between manufacturer and wholesaler or between the latter and the retailer. Horizontal agreements are those made by groups of manufacturers or wholesalers or retailers on the same trade level. Vertical agreements were legalized in almost every state

through "fair trade" laws prohibiting predatory price cutting on trade-marked commodities in open competition by permitting the manufacturer to determine the minimum resale price. The U.S. supreme court in 1936 held such state acts constitutional, and conflicts between such laws and the Sherman act were eliminated by the Miller-Tydings act. Horizontal price fixing, however, remained illegal.

The powers of the FTC were expanded in 1938 by the Food, Drug and Cosmetics act and the Wheeler-Lea amendment to the Federal Trade Commission act. The new food and drug law struck at misbranding and adulteration with broader and more drastic provisions than the Food and Drug act of 1906. The Wheeler-Lea act extended the commission's jurisdiction from the suppression of unfair competitive practices to the prohibition of practices that deceive the public. In order to curb false and misleading advertising the FTC no longer had to show that such advertising injured a competitor. It was sufficient to show that consumers would be injured.

Public Utilities and Carriers.—Noteworthy developments were: (1) extension of the area of federal control, (2) establishment of new theories and systems of cost accounting in connection with rate regulation, (3) the creation of "yardsticks" as a measure of the cost of producing electricity and (4) the attack upon holding company abuses.

The Natural Gas act of 1938 enlarged the authority of the Federal Power commission to include the regulation of the sale of natural gas moving in interstate commerce. Thus federal control over power resources became practically complete. Jurisdiction over water power and electricity had been previously assigned to the FPC, and regulation of the nation's principal fuel supplies had been asserted by the national government under the Hot Oil act of 1935 and the Bituminous Coal act of 1937. The latter act was a revised version of a 1935 statute which had been nullified by the supreme court. The 1937 coal act was approved by the court in 1940.

Public utility commission orders requiring companies to rewrite their books to conform to newer theories of ratemaking were generally approved by the courts. The trend was to use the "original cost" of the utility companies' properties instead of the "present value" as a basis for computing a fair return on their investments.

Especially significant was the development of government supported power projects to furnish "yardsticks" for the cost of producing electricity. Private utility companies fought a losing battle to enjoin construction of the Norris and other dams by the Tennessee Valley authority (TVA). The courts ruled that the production and sale of electrical power by TVA was a constitutional exercise of federal defense and commerce powers. Rural electrification, authorized under a 1936 statute, resulted in the construction of many small power plants, financed through federal loans. Such enterprises served as competitive checks on privately-owned utilities in certain areas.

Another form of regulation was instituted under the Public Utilities Holding Company act of 1935. In addition to provisions requiring public utility companies to register with the Securities and Exchange commission, the act contained the much-discussed "death sentence" clause, which limited holding company structures to a single integrated utility system. The first important case under this clause to reach the U.S. supreme court involved the North American company system which controlled 80 subsidiaries and operated in 17 states and the District of Columbia. The death sentence against North American decreed by the SEC was approved by the high court.

Jurisdiction of the Interstate Commerce commission was

both extended and curtailed. Originally endowed with strong regulatory powers over railroads, the ICC acquired control over interstate motor carriers in 1935 and over water carriers under the Transportation act of 1940. The commission was deprived of control over air carriers, however, by the Civil Aeronautics act of 1938. This law created a Civil Aeronautics authority with power to regulate all phases of interstate and foreign aviation. The CAA was authorized to control the formation of new air transport companies, issue certificates of convenience and necessity, regulate rates and enforce safety rules.

Regulation of interstate and foreign commerce in communication by wire and radio remained in the hands of the Federal Communications commission. The use of threats to compel radio stations to hire persons for broadcasting in excess of those needed and other coercive practices was outlawed by the Lea or "Anti-Petrillo" act of 1946. (See also Public Utilities.)

Securities Regulation .- Congress re-enforced federal controls over the issuance and sale of securities through the passage of the Trust Indenture act of 1939 and Investment Advisers acts of 1940. Conversion of the old rule of caveat emptor to caveat venditor had already been achieved under the Securities act of 1933 and the Securities Exchange act of 1934. These federal controls climaxed the movement to protect investors which had previously resulted in the enactment of state blue sky laws throughout the nation. The Securities act required registration of all issues and full disclosure of facts enabling buyers to judge investment values. The Securities Exchange act created the Securities and Exchange commission (q.v.) with power to regulate trading in securities on national exchanges. It also outlawed excessive margin trading, pool operations and other abuses against the public interest.

The Trust Indenture act of 1939 further protected investors by laying down minimum standards of responsibility for trustees under instruments securing bonds and similar obligations. Investment trusts were brought under the jurisdiction of the SEC by the Investment Company act, and investment counsellors were required to register with the SEC under the Investment Advisers act.

Thus almost every aspect of the issuance and trading in securities in interstate commerce was brought within the jurisdiction of the SEC by 1941. Signs pointed, however, to a possible reversal of the trend through proposals to restrict the jurisdiction of the commission.

The courts tended toward a liberal construction of laws relating to securities control. The term "security" was extended by the supreme court to include "novel, uncommon or irregular devices . . . if it be proved as a matter of fact that they were widely offered or dealt in under terms or courses of dealing which established their character in commerce as 'investment contracts,' or any interest or instrument commonly known as 'security.'" The court held that assignments of oil and gas leases under arrangements by which a promoter would drill a well on a neighbouring tract and thereby enhance the value of the investment sold to the public were subject to federal control (SEC v. Joiner Corp. 64 S. Ct. 124 [1943]). The court also held that an offering by a company of units in a citrus grove development coupled with a service contract by an affiliated company constituted an "investment contract" subject to SEC regulation even though the enterprise was not speculative (SEC v. Howey Co., 66 S. Ct. 1100 [1946]). (See also Business Review; New Deal; STOCKS AND BONDS.)

Civil Rights.—At the insistence of members of the sect known as Jehovah's Witnesses, the U.S. supreme court

wrote a new chapter in the law of religious freedom. The Witnesses won almost complete exemption for themselves and other proselytizers from laws restricting the right to distribute religious literature. In 1939 the court established the freedom of political and labour, as well as religious, propagandists to pass out handbills on public streets in spite of antilitter ordinances. Municipalities, the court said, could not use their police power to abridge the freedoms of speech and press in violation of the 14th amendment (Schneider v. State, 308 U.S. 147). The court had previously ruled that a statute giving a public official discretion to grant or refuse a licence for the sale of literature violated, constitutional guarantees (Lovell v. Griffin, 303 U.S. 444). But in 1942 the court, by a 5 to 4 vote, held that a city ordinance requiring a licence fee from all persons selling printed matter on the street or from house to house was properly applied to distributors of religious tracts (Jones v. Opelika, 316 U.S. 584). The court distinguished the situation from prior cases on the ground that the ordinance in question left nothing to official discretion.

Jehovah's Witnesses, however, refused to abide by this decision. They defiantly continued to disseminate views distasteful to many people through methods often annoying. Their persistence won a complete about-face from the supreme court. In 1943, again by a 5 to 4 margin, the court (overruling the *Opelika* decision) held that an ordinance requiring religious colporteurs to obtain a licence and pay a fee was invalid. Cities might prohibit the use of their streets for purely commercial enterprises, but the fact that religious literature was sold rather than given away did not make the enterprise commercial. To charge a licence fee for such evangelism violated the 1st and 14th amendments (*Murdock* v. *Pennsylvania*, 319 U.S. 105).

The way was thus opened to the Witnesses for further victories. In 1943 the supreme court, at their instance, knocked out several other restrictive ordinances. In Martin v. Struthers, 319 U.S. 141, they won the right to ring doorbells and otherwise disturb householders and their families for the purpose of seeking converts and distributing religious dodgers in spite of an ordinance forbidding the practice. Four justices dissented. The right to proselytize was further extended in 1946 by two 5 to 3 decisions. The manager of a company-owned town in Alabama had no right to stop religious zealots from handing out tracts on the streets (Marsh v. Alabama, 66 S. Ct. 276). Similarly, the court held that the manager of a Texas village which was owned by the United States abridged freedom of religion and the press in driving out Witnesses who campaigned for converts from door to door (Tucker v. Texas, 66 S. Ct. 274). State laws, making it a crime to refuse to leave premises when ordered out, did not justify the expulsion of missioners.

The Witnesses suffered a serious setback, however, when they came in conflict with the Massachusetts Child Labor law. A member of the sect, who took her nine-year-old niece with her on the streets at night to display and sell copies of Watch Tower and Consolation, was convicted of violating the state labour laws. In affirming the state court's decision, the U.S. high court ruled that the interests of society in protecting children outweighed the concept of religious liberty (Prince v. Massachusetts, 321 U.S. 158 [1944]).

The supreme court's reversal of the Opelika decision was paralleled by a similar change of position in the flag-salute cases. In 1940, also at the instance of the Witnesses, the court sustained a Pennsylvania regulation requiring

pupils in public schools, on pain of expulsion, to take part in a daily ceremony of saluting the U.S. flag while reciting the pledge of allegiance (Minersville School District v. Gobitis, 310 U.S. 586). But in 1943 a similar law prescribing "the commonly accepted salute to the flag" as a regular part of the program of public schools, was held to violate the 1st and 14th amendments (West Virginia Board of Education v. Barnette, 319 U.S. 624).

Freedom of conscience was recognized under the Selective Service act as a basis for exemption from combat service. "Regular or duly ordained ministers of religion" were exempted from training and service but not from registration. Conscientious objectors who were not ministers were inducted, however, and assigned "to work of national importance." Considerable controversy arose as to the administration of the draft laws in this respect. The contention of Jehovah's Witnesses that they were all entitled to complete exemption as ministers was generally denied by draft boards, which usually listed them as conscientious objectors. Some of the Witnesses refused to report for service when ordered to do so, and when prosecuted, set up the defense that it was not a crime to disobey an order based on a wrong classification. The supreme court in 1944 ruled that this was not a good defense (Falbo v. U.S., 320 U.S. 549). But in 1946 it modified its position, holding that a registrant might properly raise such a defense after reporting for induction and acceptance by the armed forces. The Falbo ruling did not apply because in that case the administrative process had not been completed by acceptance of the registrant (Estep v. U.S.; Smith v. U.S., 327 U.S. 114).

Refusal of the Illinois supreme court to license a conscientious objector to practise law was sustained by the U.S. supreme court in a 5 to 4 decision. The applicant was otherwise qualified but would not take the required oath that he would support, the state constitution because it would have pledged him to perform military service (In re Summers, 325 U.S. 561 [1945]). A year later, however, the supreme court held that refusal to promise to bear arms was not a valid ground for denying U.S. citizenship to an otherwise qualified alien (Girouard v. U.S., 66 S. Ct. 826).

Civil rights were not seriously impaired by prosecutions under the espionage and sedition laws. The department of justice exercised marked restraint in contrast with its attitude during World War I. The supreme court upheld provisions of the Espionage act of 1917 which made it a crime to transmit "information respecting the national defense . . . to be used to the injury of the United States or to the advantage of any foreign nation," friend or foe. The prewar conviction of two defendants in California for violating the act by furnishing the U.S.S.R. with U.S. naval intelligence reports was affirmed despite their contention that they believed the information to be "innocuous" (Gorin v. U.S., 312 U.S. 19 [1941]). The court declined to review the conviction of 18 Trotskyites for advocating the overthrow of government by force and inciting disaffection in the armed forces in violation of peacetime provisions of the Alien Registration act of 1940; but the court reversed the conviction of 24 members of the German-American bund under the Selective Service act for advising followers to refuse military duty until a provision of the act prejudicial to bund members seeking employment should be held constitutional (Keegan v. U.S., 325 U.S. 478 [1945]).

With the outbreak of World War II an office of censor-

ship was established by executive order with absolute discretion to censor international communications. No domestic censorship was exercised, however, except through the voluntary co-operation of publishers and the barring from the mails of Father Charles E. Coughlin's Social Iustice and publications deemed hostile to the war effort.

The attempt of the postmaster general to wield a power of moral censorship over periodicals through the denial of second-class mailing privileges to Esquire magazine was rebuked by the supreme court. It rejected the postmaster's view that he could use such privileges as a special award to give competitive advantages to "good" magazines over those he considered "bad." The Massachusetts supreme court affirmed the conviction of a bookseller under the state's obscenity statute for selling a copy of Strange Fruit. It ruled that sex scenes in Lillian Smith's best-selling novel of miscegenation went beyond the bounds of decency. Nevertheless, the court approved the doctrine expounded by Judge John Woolsey in the Ulysses case that the effect of the entire book, not of isolated passages, upon its "probable audience" should be considered.

In a series of cases the supreme court struck at discrimination against Negroes. The court held that denial of a scholarship in a state university law school solely on the ground that the petitioner was a Negro was unconstitutional (Missouri ex rel. Gaines v. Canada, 305 U.S. 337 [1939]); set aside statutory restrictions in Oklahoma on the right of Negroes to vote (Lane v. Wilson, 307 U.S. 268 [1939]), and the Texas "white primaries" law, overruling a 1935 decision (Smith v. Allwright, 321 U.S. 649 [1944]); held that "peonage" statutes in Georgia and Florida violated the ban of the 13th amendment against involuntary servitude; affirmed the power of the federal government under a 75-year-old law to punish state officers for violating the civil rights of Negroes (Screws v. U.S., 325 U.S. 91 [1945]); reversed one Texas conviction of a Negro based on an indictment by a grand jury from which Negroes were excluded but affirmed a similar conviction where one Negro had been included on the panel; granted relief in two cases to Negro locomotive firemen against discrimination by a labour union; upheld provisions of New York's Civil Rights act which made it a penal offense for labour organizations to deny membership to any person by reason of race, colour or creed (Railway Mail Association v. Corsi, 326 U.S. 88 [1945]); and knocked out Jim Crow segregation of bus passengers in interstate traffic (Morgan v. Virginia, 66 S. Ct. 1050 [1946]).

The New York Fair Employment Practices act became effective July 1, 1945. It declared the opportunity to obtain employment without discrimination to be a civil right and outlawed discrimination by employers and labour unions against any person because of race, colour, creed or national origin. F.E.P.C. acts were also adopted in New Jersey, Indiana, Wisconsin and Massachusetts. Georgia repealed its poll tax in 1945.

Two supreme court rulings in 1941 clarified the court's attitude toward contempt proceedings. In Nye v. U.S., 313 U.S. 33, the court overruled an earlier decision and held that a contempt was not punishable unless perpetrated in geographical proximity to the court. In Bridges v. California, 314 U.S. 252, the court by a 5 to 4 vote cleared Harry Bridges and the Los Angeles Times of contempt sentences for their conduct, respectively, in (1) sending a telegram to the secretary of labour denouncing a court decision against Bridges; and (2) publishing editorials praising verdicts of guilty against sit-down strikers and urging the court not to grant them probation while motions for new trial were pending. The supreme court ruled that

there had to be a clear and present danger that out-ofcourt comments on pending cases would obstruct justice before a court was justified in holding critics in contempt. The court applied the same test in a 1946 decision reversing a contempt ruling against a newspaper for criticizing state courts for their failure to enforce the law in cases involving charges against gambling establishments (Pennehamp v. Fla., 66 S. Ct. 1029). (See also Civil Liberties.)

Constitutional Law.—The year 1937 marked the beginning of notable changes in the U.S. supreme court's attitude toward constitutional questions. Construction of federal basic law became both more liberal and more fluid. The old distinctions between legislative, executive and judicial functions of government lost force as such functions were to a large extent merged in certain administrative agencies. The supreme court also renounced to a large extent the supremacy which it had previously asserted over the legislative and executive branches, adopting a handsoff policy toward legislation, both federal and state, and severely limiting its review of administrative agency findings.

The court approved an unprecedented extension of federal power over the social and economic system through legislation affecting almost every phase of production, distribution and labour relations. At the same time it was disinclined to interfere with the powers of the states except where their exercise clearly threatened necessary federal controls or violated rights guaranteed under the U.S. constitution

The supreme court repeatedly overruled its own earlier decisions, stressing the promulgation of sound doctrine as more important than predictability of the law. Thus the court withdrew its prior prohibitions against picketing; approved broad delegations of legislative powers to administrative agencies which it had previously denied; repudiated the view of Swift v. Tyson adhered to since 1840, that there was a federal common law applicable in controversies between citizens of different states and ruled that local state law must be followed by the federal courts in such cases (Erie v. Tompkins, 304 U.S. 64 [1938]); discarded the historical decision in Haddock v. Haddock (201 U.S. 562) that the full faith and credit clause did not require recognition by the states of out-of-state divorces but later watered down the effect of its ruling (see section Marriage and Divorce; Family Relations, below); sanctioned state and federal minimum wage laws for women, nullifying former bans; shifted from the doctrine of reciprocal immunity from taxation between state and federal agencies to the view that both could levy reciprocal nondiscriminatory taxes; approved the multiple taxation of intangibles by the various states in spite of prior contrary rulings; subjected the salaries of federal judges to income taxes, removing a long-enjoyed exemption; reversed itself in the flag salute and handbill cases within the space of 3 years; knocked out a 15-year-old ruling that refusal to bear arms was a ground for denying U.S. citizenship; cancelled state white primary laws which it had once upheld; and approved the Agricultural Adjustment act of 1938 as a proper exercise of the government's police power although it had found the AAA of 1933 to be an abuse of the taxing power.

The supreme court also electrified the legal and business worlds with its 1944 decision in U.S. v. South-eastern Underwriters, 322 U.S. 533, that insurance was commerce subject to the provisions of the antitrust laws; opened a new legal vista by agreeing to entertain an original suit brought by the state of Georgia against 20 railroads to enjoin a conspiracy to fix discriminatory rates (Georgia v.

Pennsylvania R. R. Co. et al., 324 U.S. 439 [1945]); for the first time construed the treason clause of the constitution; made a new application of the due process clause by ruling that the loss of chickens caused by the lights and noise from army bombers was a "taking" of property which entitled the owner to compensation; and unanimously declared an act of congress, which ordered the exclusion of three persons from federal employment, to be a bill of attainder, inflicting punishment without trial, in violation of the constitution (U.S. v. Lovett, 90 U.S. Law Ed. 1052 [1946]).

The concept of interstate commerce was broadened far beyond any previous rulings. It was held to include all activities that may affect the "economics" of interstate commerce. Federal regulation of activities formerly considered local was approved when reasonably necessary for the control and protection of commerce among the states. Thus the wheat marketing quota provisions of the AAA of 1938, as amended in 1941, were applied to wheat intended wholly for consumption on the farm where grown (Wickard v. Filburn, 317 U.S. 111 [1942]); federal regulation of commerce in milk was extended to intrastate transactions where necessary to make interstate controls effective. (U.S. v. Wrightwood Dairy Co., 315 U.S. 110); and wage-hour controls were held to cover employees engaged locally in servicing the buildings of companies producing goods for interstate commerce.

The supreme court, however, tried to reconcile federal and state conflicts over the control of commerce wherever possible through a doctrine of "accommodation" by which it compared the relative weights of the national and local interests involved. It found that California's Agricultural Prorate act which set up a marketing program for the purpose of restricting competition and maintaining prices was not a violation of the Sherman act. State regulations affecting interstate commerce would be sustained, the court said, if the matter seemed to be one appropriate for local control without seriously obstructing the flow of commerce (Parker v. Brown, 317 U.S. 341).

This same attitude of abstention led to the approval of a wide variety of state taxes which to a large extent operated as interstate trade barriers. The court in general approved sales and use taxes on articles bought outside a state for delivery within the state. Retaliation statutes of Missouri and Michigan, prohibiting the importation and sale within their borders of liquor manufactured in other states which discriminated against Missouri- and Michiganmade liquor, were also sustained. On the other hand, obvious attempts by states to levy tariffs on out-of-state products were not tolerated. A Florida act providing for inspection of imported cement and the payment of an inspection fee of 15 cents per 100 lb. was held an unconstitutional burden on interstate commerce (Hale v. Bimco Trading, Inc., 306 U.S. 375 [1939]). So too California's attempt to keep out undesirable immigrants was rebuked by the high court in the so-called "Okie case." A statute making it a misdemeanour to bring a nonresident indigent person into California was held an illegal restraint upon the right of "national citizens" to move from state to state (Edwards v. California, 314 U.S. 160 [1941]).

Among the state statutes approved by the U.S. supreme court were: Virginia's Milk and Cream act establishing a milk commission with power to create within its borders natural market areas, license distributors and fix maximum and minimum prices (Highland Farms Dairy, Inc. v. Agnew, 300 U.S. 608 [1937]); the Washington Minimum

Wage law requiring the payment to women employees of a wage sufficient for their decent maintenance (West Coast Hotel Company v. Parrish (300 U.S. 379 [1937]); the Kansas Filled Milk act; and state liquor laws, including a state monopoly of the sale of liquor for nonbeverage purposes (Walding, etc. Co. v. Department of Liquor Control, 305 U.S. 560 [1938]). But the court struck down as unconstitutional the Oklahoma Criminal Sterilization act because of its discriminatory classification of crimes; the Georgia and Florida "peonage" laws; the Oklahoma Community property law; the Kentucky Escheat act; the Arizona train limit law; and parts of the Texas and Florida union control laws

New constitutions were adopted by Missouri and Georgia.

Criminal Law.—Some progress was made toward modernizing procedures for the trial of accused persons and the treatment of those convicted. The U.S. supreme court adopted rules of criminal procedure under authority delegated by congress in 1933. The new rules went into effect on March 21, 1946, establishing uniform procedure for criminal cases in all federal courts. They were drafted by an advisory committee working in collaboration with lawyers and judges throughout the nation. Among the improvements achieved were the substitution of a new form of indictment for the involved forms in use for a century, a single motion to dismiss in place of various technical motions, the introduction of motions for change of venue and simplification of removal procedure. Proposals for more drastic reforms were rejected.

Only two states made substantial progress toward revising their criminal laws. Louisiana in 1942 adopted a new criminal code which eliminated useless and obsolete terminology, blocked gaps in penal provisions and stated principles in clear, simple language. Forgery, for instance, was defined in a single line. Although the new code abolished minimum sentences and gave trial judges broad discretion in sentencing defendants, it was not especially directed toward reforms in the treatment of criminals. California, on the other hand, in its enactment of a new Penal and Correction Law in 1944 gave recognition to the recommendations of progressive criminologists that more attention should be given to the prevention of crime and the cure of delinquents. The new statute created a department of correction with authority over all state penal and correctional institutes. A board of corrections was created to study the subject of crime-including causes, prevention, apprehension of criminals and methods of prosecution. Some features of the act were inspired by proposals of the American Law institute which in 1940 sponsored a model "Youth Correction Authority act" suitable for adoption by state legislatures. The institute advocated separate treatment of youthful offenders by turning them over to a rehabilitation commission or correction authority instead of sentencing them to prison. Such a commission would have the job of (1) keeping offenders segregated as long as they might be dangerous to society, (2) investigating the causes of their criminality and trying to correct them through training and (3) keeping watch over offenders after their release, not only to prevent recidivism but also to assist their rehabilitation through counsel and financial help. The institute supplemented this plan in 1941 by the publication of a model "Youth Court act" laying out the framework for a specialized court to try offenders under

Congress made it possible for federal judges to give spe-

cial consideration to youthful defendants in criminal cases. Under the Juvenile Delinquency act (1938) any juvenile 17 years of age or under, charged with an offense against U.S. laws not punishable by death or life imprisonment, might be put on probation or committed to the custody of the attorney general, if the accused waived a jury trial and consented to such procedure.

Progress was also made toward a nation-wide system to aid rehabilitation of paroled convicts. Thirty-nine states signed the Interstate Parole and Probation compact. Through a system of state administrators it became possible for a parolee to "begin life over" in a new state under improved conditions, subject to safeguards against the abuse of the system to evade the authority of the state where the parolee was originally convicted.

The scope of the federal criminal law was somewhat enlarged through statutes creating new offenses, including several with respect to interstate commerce, a 1946 amendment sharpening the teeth of the Anti-Racketeering act of 1934, and the Anti-Lobbying act of 1946.

The supreme court ruled that plural or "celestial" marriages between members of the Fundamentalist cult of the Mormon faith did not violate the federal Kidnapping act even though such marriages involved the transportation of women, some of them minors, for immoral purposes, since there had been no involuntary seizure or detention (Chatwin v. U.S., 14 LW 4659 [1946]). But the transportation of "plural" wives across state lines by members of the same cult was held to violate the Mann act (Cleveland v. U.S., 15 LW 4004 [1946]).

In the much-cited case of McNabb v. U.S., 318 U.S. 332 (1943) the supreme court created a new rule of evidence. Three members of a clan of Tennessee mountaineers had been sentenced to 45 years imprisonment for the murder of a "revenuer." Confessions were obtained from the defendants during two days while they were held for questioning before being brought before a U.S. commissioner for commitment as provided by statute. The high court said that such confessions could not properly be used against the defendants because they were obtained by a flagrant disregard of the arresting officers' duty to take the defendants before a magistrate. The effect of this ruling was whittled down considerably by later federal and state court decisions. The mere holding of a suspect for a protracted period before arraignment was held not to invalidate a voluntary confession where there was no coercion (U.S. v. Mitchell, 322 U.S. 65 [1944]).

In a series of cases the supreme court held that the failure of trial judges to appoint counsel for defendants in criminal cases was a denial of due process even though the defendant did not ask for counsel and had no funds to pay for such service, nor did a defendant waive this right by pleading guilty. He might, however, expressly waive his right to counsel as well as his right to a jury trial, even though he had not had the advice of counsel.

War Crimes.—With the threat of rising nazi and fascist power, democracy faced the problem of curbing the activities of pro-axis organizations and agencies without destroying the civil liberties. Sedition provisions of the Espionage act of 1917, operative only in wartime, were supplemented by the Alien Registration act of 1940, which contained drastic provisions against subversive activities in peacetime as well as during war. The Selective Service act of 1940 also made it a crime to counsel or abet another to evade registration or service. The leader of the "Silver Shirts," William Dudley Pelley, was convicted under the sedition laws for pro-Japanese and pro-German activities after the outbreak of war. The much-publicized trial of

29 defendants at Washington, D.C., for violation of sedition laws was ended, however, by the death of the presiding judge, and in 1946 the case was dismissed in spite, of objections by the attorney general.

Two convictions for pro-nazi activities were reversed by the U.S. supreme court. In one case, evidence was held insufficient to prove a conspiracy to acquire and export gold bullion to Germany without a licence (Bates v. U.S., 323 U.S. 15 [1944]). In the other case, the defendant had been found guilty of violating the 1917 espionage act by writing and circulating pamphlets libelling the president, attacking the British and the Jews and calling for a nazi victory, with intent to obstruct recruiting and enlistment and to cause disloyalty among the armed forces. But the conviction was set aside by a 5 to 4 decision. While characterizing the pamphlets as unreasoning and vicious appeals to prejudice, the court ruled that the government had not proved beyond a reasonable doubt that the defendant intended to undermine the morale and loyalty of the armed forces (Hartzel v. U.S., 322 U.S. 680 [1944]).

In another 5 to 4 decision, the supreme court reversed the conviction of 24 members of the German-American bund for violating the Selective Service act. The defendants had advised members of their society to refuse military duty until congress should repeal a provision of the act prejudicial to bund members seeking employment. This in itself did not constitute counsel to "evade" service, the court held. Nor was the fact that the accused were pro-German and opposed the entry of the United States into the war a violation of the act (Keegan v. U.S., 325 U.S. 478 [1945]).

For the first time in its history, the supreme court rendered a decision on the subject of treason. By a 5 to 4 vote, the court reversed the conviction of Anthony Cramer, a naturalized citizen of German birth, charged with giving aid and comfort to the enemy in meeting, drinking and conferring with two of the German saboteurs who were landed from a submarine in 1942. There was evidence that the accused was pro-nazi, knew or believed that he was dealing with saboteurs and had accepted more than \$3,000 in currency to be held for the use of the saboteurs. But the supreme court held that his conviction for treason did not rest "on the testimony of two witnesses to the same overt act" as required by article iii section 3, of the federal constitution (Cramer v. U.S., 325 U.S. 1 [1945]). (See also Federal Bureau of Investigation.)

Housing.—The movement for slum clearance and lowcost housing, born of depression years, resulted in the National Housing act of 1937, establishing the U.S. Housing authority. Previous measures had been directed mostly toward spreading employment by making loans available for home building. The 1937 act, however, was intended not only to relieve unemployment but to inaugurate a national program for the elimination of slum areas and the erection of decent housing for low-income families. Funds were made available, through credits and subsidies, for use by state-created agencies under state laws to be integrated with the federal statute. To qualify for federal grants, such state legislation was required to provide for demolition or repair of houses dangerous to public health and safety. The role of the national government was that of financier. Exercise of the power of eminent domain was left to the states and their agencies.

All but a few states enacted urban redevelopment laws, co-ordinated with the National Housing act of 1937. State courts uniformly upheld the right of local housing authorities to condemn land under such laws as a proper extension of recognized governmental powers to protect public

health, safety and morals and to promote the general welfare. The high courts of Massachusetts, New York and Illinois also upheld the right of their legislatures to delegate the power of eminent domain to private profitmaking corporations for the purpose of slum clearance.

The exemption of public housing projects from taxation was generally approved except in Ohio, where the supreme court ruled that a state housing project was not "public property used exclusively for any public purpose" within the meaning of a constitutional provision covering tax exemptions. The attempt of local authorities to tax a housing project built on federally-owned land was thwarted, however, by the U.S. supreme court, which sustained the power of congress to exempt such property from state taxation under the National Housing act of 1937 (Cleveland v. U.S., 323 U.S. 329 [1945]).

In 1940 congress enacted the Defense Housing act to relieve the plight of armed service personnel and defense workers uprooted and homeless because of participation in defense preparations. The war and navy departments, aided by the U.S. Housing authority, were authorized to provide the needed dwellings for officers, enlisted men and civilian employees of the army and navy. The Federal Works administrator was directed to provide housing for other defense workers.

The suspension of long-term housing projects because of defense and war activities further intensified the shortage of shelter, which became critical with the return of servicemen at the war's end. The Servicemen's Readjustment act of 1944 (G.I. Bill of Rights) gave federal support to loan agencies in financing home-buying by veterans, but material and labour still were lacking to provide the much-needed housing. The Veterans Emergency Housing act was passed in 1946 in an effort to ease the situation. It created the office of housing expediter with authority to allocate housing materials under priorities for veterans, establish price ceilings on new houses, make incentive payment to stimulate production of materials, authorize Federal Housing administration insurance on mortgage loans for the construction of housing for veterans and guarantee markets on new types of building materials and prefabricated houses. (See also Housing.)

Labour Relations.-The Roosevelt administration was especially marked for the boost given to organized labour. It should be recalled, however, that the way had been prepared by a Republican congress in 1932 with the passage of the Norris-La Guardia act banning the issuance of injunctions by federal courts against peaceful striking or picketing. The resulting advantage to labour was vastly reinforced by three New Deal laws: (1) The National Labor Relations or Wagner act, enacted in 1935, which improved the bargaining position of labour, (2) the Byrnes Anti-strikebreakers act of 1936, amended in 1938, which made it a felony to transport any person in interstate commerce for the purpose of interfering with peaceful picketing or the collective bargaining process; and (3) the Fair Labor Standards act of 1938, which extended broad federal controls to wages and hours. Defense and war production brought a voluntary strike truce in industries contributing to such effort; and in 1943 congress sought to prevent any breach of this truce through the passage of the Smith-Connally act designed to avoid work stoppages in war production. This antistrike law was one of three federal enactments which could be construed as hostile to labour. The other two came after the war's end. The "Anti-Petrillo" act of 1946 amended the Communications

act by making it a felony for anyone to coerce radio broadcasters into hiring more employees than they considered necessary. In the same year, congress added teeth to the Anti-racketeering act of 1934 through amendments which labour leaders feared would be used for strikebreaking.

NLRA. Labour's improved position was assured in 1937, when the supreme court in five comprehensive decisions found the Wagner act constitutional. This law was designed to equalize bargaining power between employees and management by (1) preventing unfair labour practices and (2) protecting the right of employees to organize and bargain collectively. Unfair labour practices were defined, and machinery was provided for the election of worker representatives to deal with management on behalf of a particular bargaining unit. The National Labor Relations board, created to administer these provisions, was not given any power to mediate labour disputes. That function remained with the secretary of labour and the conciliation service of the labour department. Nor did the NLRA cover agricultural workers or railway employees.

In its 1937 decisions, the supreme court held that the NLRA applied not only to transactions in the direct flow of interstate commerce, but also to concerns engaged in manufacturing and production where interstate commerce was affected. Companies which bought raw materials and sold finished products outside their home states were clearly subject to the act. Employees held to come within the NLRA included steel plant workers (NLRB v. Jones and Laughlin Steel Corp., 301 U.S. 1); employees of a trailer manufacturer (NLRB v. Fruehauf Co., 301 U.S. 49); clothing workers (NLRB v. Friedman etc. Co., 301 U.S. 58); employees of a newspaper press association (AP v. NLRB, 301 U.S. 103); and interstate bus drivers (Washington Coach Co. v. NLRB, 301 U.S. 142). A year later the court rejected the place of origin of raw materials and the comparative percentages of interstate and intrastate business transacted by employers as factors determining the jurisdiction of the labour board. No mathematical line could be drawn, the court said (Santa Cruz Co. v. NLRB, 303 U.S. 453). Subsequent decisions continued to support a broad application of the NLRA.

Rulings of the labour relations board directed against unfair labour practices were generally sustained by the supreme court, which supported the broad power of the board to order such affirmative action as might be necessary to carry out the policies of the Wagner act. Various types of activities were held to be unlawful restraint or coercion of employees in their right to organize themselves and to bargain collectively over wages, hours and working conditions through representatives of their own choosing. The supreme court upheld the NLRB in requiring an employer to withdraw recognition of a company union and to post notices of such withdrawal (NLRB v. Pacific Greyhound Lines, 303 U.S. 272 [1938]); in directing the disestablishment of a company-dominated union, the reimbursement of dues checked off to that union and the reinstatement of employees (Va. El. & Power Co. v. NLRB, 319 U.S. 533 [1944]); in ordering an employer to bargain with a union even though it had lost its majority status after the employer had refused to bargain with it (Franks Bros. Co. v. NLRB, 321 U.S. 702 [1944]); and in directing corporations to abandon plant rulings forbidding employees to wear union buttons, solicit union membership or distribute handbills on company premises during nonworking time. The attempt of an employer to by-pass a union, designated as bargaining agent, by entering into

separate contracts with individual employees was also stigmatized by the supreme court as a violation of the NLRA (Case Co. v. NLRB [1946]).

The labour relations board was not only charged with the duty of preventing unfair practices, but also with making effective the right of labour to bargain collectively through representatives chosen by the majority of workers in a particular bargaining unit determined by the board. The right to bargain collectively, thus guaranteed, was consistently upheld by the supreme court, which said that while employers had a right to conduct their business without being subjected to arbitrary restraints "employees have their co-relative right to organize for the purpose of securing the redress of grievances and to promote agreement with employers relating to rates of pay and conditions of work" (Va. Ry. v. Federation No. 40, 300 U.S. 515 [1937]). The court also ruled that once a bargain had been reached, a union was entitled to have it put in writing. Refusal of the employer to sign was a violation of the NLRA (Heinz Co. v. NLRB, 311 U.S. 514 [1941]).

Freedom of a majority of workers in the election of their bargaining representatives was held to be a necessary corollary to their right to bargain collectively. NLRB orders certifying unions as bargaining agents or setting aside elections because of interference by employers were with few exceptions affirmed by the courts.

The right to picket peacefully was firmly established in Thornhill v. Ala., 310 U.S. 88 (1940), as a proper exercise of the right of free speech. The court knocked out a state law forbidding picketing. The supreme courts of California and Michigan also invalidated local ordinances against picketing. Furthermore, the U.S. supreme court approved 'stranger" picketing by nonemployees in order to bring pressure for the unionization of an open shop (A.F.L. v.Swing, 312 U.S. 321 [1941]). Picketing, however, would come within the free speech guarantee only as long as it remained peaceful. If set in a background of violence, picketing might be enjoined (Milk Wagon Drivers v. Meadowmoor Dairies, 312 U.S. 287 [1941]). Abuse of the right to picket, falling far short of violence, did not justify an injunction. Mere misrepresentations on signs carried by pickets were not an unlawful abuse of rights (Cafeteria Union v. Angelos, 320 U.S. 293).

The right to strike was also sustained by the supreme court provided it was exercised within lawful limitations. Sit-down strikes involving the seizure of company property were outlawed (NLRB v. Fansteel Corp., 306 U.S. 240 [1939]). In fact, the court insisted that management not only had the right to have violent picketing and sit-down strikes enjoined, but that it retained other substantial rights such as the right to hire and fire, to demote and transfer employees, to state its preference among unions and to exercise the right of free speech, provided such rights were not unreasonably used to coerce employees in violation of the Wagner act. (See also National Labor Relations Board).

Labour and Antitrust Laws.—Labour organizations were not wholly excluded from the operation of the antitrust laws, according to the supreme court, but the decisions of a majority of the justices greatly narrowed the application of such laws to union activities. In Apex Hosiery Co. v. Leader, 310 U.S. 469 (1940) an employer brought suit under the Sherman act to recover treble damages from a union and its officers for injuries caused to its plant and business by sit-down strikers. The court ruled that the mere stoppage of interstate shipments was not a restraint on commerce within the meaning of the Sherman act unless there was a showing that it curtailed competition by

affecting market prices. This decision was amplified by U.S. v. Hutcheson, 312 U.S. 219 (1941) in which the court held that boycotting and picketing against an employer engaged in interstate commerce are not violations of the Sherman act "so long as a union acts in its own self-interest and does not combine with non-labour groups." Such activities were protected from prosecution in the light of interrelating provisions of the Sherman, Clayton and Norris-La Guardia acts.

So too, in a much-criticized decision, the court ruled that a combination of workers acting alone was exempt from the operation of federal antitrust laws even though their action might ruin the business of a particular employer (Hunt v. Crumboch, 65 S. Ct. 1545). But their immunity ceased as soon as they combined with others outside their membership. A combination of unions, manufacturers and contractors to create a monopoly in electrical equipment in the New York city area through a boycott of goods produced elsewhere was properly enjoined as a violation of the Sherman act (Bradley Co. v. Local No. 3, 65 S. Ct. 1533).

State Laws.—While one group of states, including Connecticut, Massachusetts, Michigan, Minnesota, New York, Pennsylvania, Utah and Wisconsin, adopted laws guaranteeing labour the right to organize and bargain collectively, another group tried to crack down on unions through restrictive statutes. State labour relations laws, even in the first group, tended to be less liberal to labour than the Wagner act. Issues were raised in some cases over the jurisdiction of state and federal labour boards. The U.S. supreme court held that the states were not excluded by the NLRA from exercising police power over union activities, and the Wisconsin supreme court indicated that a workable compromise could be reached. but neither state nor federal courts arrived at any test which could be easily applied where jurisdiction conflicted or overlapped.

The federal high court, however, struck out state labour laws infringing freedom of speech and assembly. The court reversed the conviction by a Texas court of R. J. Thomas, United Automobile Workers president, for addressing a labour rally without first obtaining an organizer's card as provided by the state's union control act. Requirements that paid labour organizers obtain and carry state registration cards while soliciting membership were held to be invalid, but provisions prohibiting aliens and felons from serving as union officers or organizers, barring union contributions to political parties and candidates and requiring unions to keep financial records open to members and state officials were not disturbed (Thomas v. Collins, 65 S. Ct. 315).

The supreme court also swept aside provisions of the Florida union control law as repugnant to the Wagner act. Sections of the statute limiting unions in the choice of business agents to persons who could show citizenship and ten years' U.S. residence and giving courts the power to enjoin unions from all activities in the state for noncompliance with various statutory requirements were held to infringe the freedom to bargain collectively guaranteed by the NLRA (Hill v. Watson, 65 S. Ct. 1373).

Railway Labour.—Machinery for the peaceful settlement of disputes between railway labour and management operated under the Railway Labor act of 1926, as amended in 1934. The act guaranteed the right of employees to bargain collectively through representatives of their own choosing. Coercive interference either by labour groups or management in the process of selecting representatives was forbidden. The act was designed to foster the friendly

adjustment of disputes between the parties themselves. Where that failed, all questions over the interpretation of agreements between labour and management were first referred to the National Railroad Adjustment board. Another agency, the National Mediation board, stood ready to furnish mediation and conciliation facilities where disputes broke out over pay, rules and working conditions. The same board also exercised control over employee elections and the certification of bargaining representatives. Arbitration under the act remained purely voluntary, however. Constitutionality of the Railway Labor act was sustained by the supreme court in Va. Ry. v. System Federation No. 40, 300 U.S. 515 (1937) and other decisions.

In May 1942 the president created the National Railway Labor panel as an emergency fact-finding body to assist in the settlement of railway labour disputes which might affect war production.

War Labor Disputes Act.-In an effort to avert strikes in defense plants, the president created the National Defense Mediation board in March 1941 to negotiate the settlement of disputes referred to it by the secretary of labour. But this agency seemed inadequate to meet the perils of work stoppage after U.S. entry into World War II. The president therefore replaced it in Jan. 1942 with the National War Labor board after a conference with leaders of labour and management at which both sides agreed to refrain from strikes and lock-outs during the war emergency and to submit disputes to the proposed new agency. The WLB included representatives of the public, labour and employers. It proceeded to exercise jurisdiction on its own motion over a wide variety of disputes with the assumption that its findings were final and binding. In 1942, when the president was empowered by statute to stabilize prices, wages and salaries, he turned this function over to the WLB.

The Smith-Connally or War Labor Disputes act, effective July 1, 1943, gave statutory recognition to the WLB, establishing its jurisdiction to decide wages, hours and all other issues in any labour disputes which might lead to substantial interference with the war effort. The act also provided that when a strike was threatened in a war plant, the workers' representatives were required to notify the secretary of labour, the War Labor board and the National Labor Relations board, and submit a statement of the issues involved. Production was required to continue for the next 30 days. If the dispute was not settled during this cooling-off period, then on the 30th day the NLRB would take a secret vote to determine whether a majority of the workers wished to strike. The president was empowered to take possession of any war plant on behalf of the government whenever its operation should be interrupted by a labour disturbance. The plant had to be returned to its owners, however, within a period of 60 days after the restoration of its productive efficiency. The act also made it a crime to induce or instigate a strike, lock-out, slowdown or other interference with the operation of a government-controlled plant.

The WLB in general avoided conflicts with previously established labour tribunals. It adopted a policy of non-interference with the authority of the NLRB over unfair practices affecting commerce and with the National Mediation board over labour problems involving railways and their employees. The WLB did not attempt to invade the jurisdiction of the NLRB by conducting elections to select collective bargaining agents or by ordering the cessation of unfair labour practices. It did, however, take the posi-

tion that its jurisdiction was not limited to labour disputes affecting interstate commerce, maintaining that its authority was derived from the war powers of the president under the constitution.

The status of the WLB was at issue in a long-fought war between the government and Montgomery Ward and Co. over WLB directives for the maintenance of union membership, wage increases and machinery for arbitrating grievances in a contract with a C.I.O. union. In 1944 the government seized the company's properties in Chicago, Ill., and six other cities under a presidential order which declared that Ward's labour policies were impeding the war effort. A federal court held the seizure to be a proper exercise of the president's war powers under the Smith-Connally act. But the government's victory was fleeting. When the case reached the supreme court late in 1945, it was dismissed as moot, since the emergency of war production had ended.

The decade ended with public attention focused on a labour-management drama in which John L. Lewis, president of the United Mine Workers, held the centre of the stage. A U.S. district judge had issued an injunction restraining Lewis and his union from breaking a contract with the government in connection with the operation of soft coal mines and from striking against the government. The miners ignored this order, however, on the ground that it was unconstitutional and violated the Norris-La Guardia act. The court then entered a fine of \$3,500,000 against the union and \$10,000 against its president for contempt of court. The supreme court agreed to review both the injunction and contempt proceedings.

(See also LABOUR UNIONS; STRIKES AND LOCK-OUTS.)

Marriage and Divorce; Family Relations.-The hope of creating order and uniformity in the welter of statutes and decisions on family relations in the 48 states found little support in the courts and legislatures. Recommendations of the Commissioners on Uniform State Laws were generally disregarded. Laws requiring premarital medical tests to show freedom from venereal disease were enacted, however, under pressure from medical organizations in a steadily enlarging group of states, including New York, Massachusetts, Illinois, California and others containing large urban populations. The desire for hasty marriages, stimulated by war conditions, created new problems. Proxy marriages between members of the armed forces overseas and their betrothed in the United States were generally frowned upon by public officials. A study made by the National Association of Legal Aid bureaus indicated that no state except possibly Kansas would hold such marriage legal. Long-distance marriages in which the parties participated directly by telephone or cable seemed more likely to win court approval.

A sharp rise in divorce actions followed the mounting curve of defense and war production. With the general higher level of earnings, divorce apparently was no longer considered a luxury item. The trend in trial courts was toward more liberal construction of divorce grounds. Many judges were inclined to extend the definition of cruelty to include conduct impairing the health of a spouse, bodily or mental, even though not caused by physical violence. Several states also made separation without cohabitation for a specified number of years a ground for divorce without proof of desertion. Two decisions of the U.S. supreme court in the celebrated Williams case made divorce law history. This case originated in North Carolina where a man and woman were convicted of "bigamous

cohabitation." The defendants, originally residents of North Carolina, had each obtained divorces in Nevada from their respective spouses, then married each other and returned to North Carolina, where they lived together as man and wife. The Nevada divorces had been obtained in proceedings based on "substituted service," that is, notice to the defendants in North Carolina was given by publication in a Nevada newspaper. The supreme court held in 1942 that since such service fulfilled the requirements of Nevada law, full faith and credit required North Carolina to recognize the Nevada decrees, thus overruling its famous 1906 decision in the Haddock case (Williams v. N.C., 317 U.S. 287). The court, however, did not pass on the question whether the Nevada decrees had been based on bona fide residence of the plaintiffs in that state. Trial courts therefore generally held that the Williams decision merely eliminated the requirement of personal service on the defendant in out-of-state divorces, and that it did not preclude them from denying the validity of such divorces where neither of the spouses was genuinely domiciled in the state granting the divorce. This view was confirmed by the supreme court when the Williams case reached it again in 1945. A second prosecution of the same parties in North Carolina had resulted in their conviction based on evidence that their Nevada divorces were invalid because they had not acquired bona fide domicile in that state. The supreme court affirmed this decision on the ground that every state had the right to inquire into jurisdictional facts in connection with divorce decrees granted by other states (Williams v. N.C., 325 U.S. 226). As a result the status of "migratory divorces" remained precarious except where the court obtained jurisdiction upon actual residence of the plaintiff established in good faith and not merely for the purpose of divorce.

An Illinois statute purporting to bar "heart balm" suits (for alienation of affections) was held unconstitutional by the state supreme court on the ground that it violated the guarantee of the Illinois constitution that every person should have a remedy for his injuries and wrongs (Hecht v. Schupp, 68 N.E. 2nd, 464 [1946]).

New legal ground was broken by a U.S. circuit court when it approved a suit brought on behalf of children against a woman who was alleged to have persuaded their father to leave them and their mother and to refuse to support them. The court held that such an action came within the principles of the common law which could properly be applied to new situations as they arose, even though there was no specific authority for such an action in court decisions or statutes (Daily v. Parker, 152 F. 2d 174). (See also Marriage and Divorce.)

Military Justice.—The number of soldiers tried by court martial during World War II averaged only 3 out of every 1,000 in the U.S. army as compared with a rate three times as great in World War I. Public protests against harsh sentences and other abuses stimulated proposals for changes in military law and procedure. The secretary of war announced in 1945 that 27,500 convictions would be reviewed by special clemency boards for the purpose of adjusting unfair and unduly severe sentences. The postwar trial of officers charged with brutal treatment of prisoners in the U.S. military prison at Litchfield, England, resulted in mild sentences for the commanding officer and some of his subordinates.

One of the most dramatic events in supreme court history was the calling of a special session in midsummer 1942 to hear the petitions for habeas corpus of nazi saboteurs who had been arrested after landing on U.S. shores from submarines. The court ruled that they could prop-

erly be tried by a military commission appointed by the president. They were spies and not entitled to the status of prisoners of war nor to a jury trial. The commission found all of the defendants guilty. Six were executed, two imprisoned (U.S. ex rel. Quirin v. Cox, 317 U.S. 1). The high court also denied writs of habeas corpus to the Japanese generals, Tomoyuki Yamashita and Masaharu Homma, who were condemned to death by military commissions for war atrocities. A majority of six justices found the procedure to be constitutional, but Justices Wiley Rutledge and Frank Murphy, dissenting, characterized the trials as unprecedented deprivations of basic rights (Yamashita v. Styer, 327 U.S. 1 [1945]).

Civil courts in general gave precedence to military tribunals in the prosecution of their own personnel for crimes during wartime even though committed against civilians. But the jurisdiction of military courts over offenses by servicemen against state laws was held not to be exclusive. Nor was military jurisdiction over a registrant under the Selective Service act to begin until he was actually inducted. He was subject to prosecution only in civil courts (Billings v. Truesdell, 321 U.S. 542 [1944]).

The most significant conflict between civil and military authorities arose in Hawaii, where martial law was declared Dec. 7, 1941, and continued until Oct. 24, 1944. Cases involving thousands of civilians were tried by military courts, and the writ of habeas corpus was suspended. The supreme court, however, ruled in a 6 to 2 decision that this was a usurpation of power. Court-martial sentences against a Honolulu business man for embezzlement and a naval workman for assault on marine corps sentries were held to be illegal. The organic act which created the territory of Hawaii permitted the declaration of martial law under threat of invasion, but it did not deprive Hawaiian citizens of constitutional rights enjoyed by citizens of the states. Declaration of martial law did not give military authorities the right to take over the functions of civil courts even in wartime (White v. Steer and Duncan v. Kahanamoku, 327 U.S. 304 [1946]).

Patents, Trade-Marks and Copyrights.—Alarm over the extent to which patent rights had been used to establish monopolistic controls over entire industries, both on national and international scales, stimulated government prosecutions under the antitrust laws. (See section Business Regulation, above.)

In 1940 congress tightened provisions of a 1917 statute which authorized the commissioner of patents in wartime to keep an invention secret and to withhold the grant of a patent where he might deem disclosure of an invention to be "detrimental to the public safety or defense." The 1940 amendment, effective for two years, removed the wartime limitation, provided for protection of the inventor's property rights and imposed heavy penalties for violations of secrecy orders. Further patent law amendments in 1942 provided for the adjustment of royalty rates to be paid on patented articles manufactured in war production.

In 1943 the National Patent Planning commission, established by executive order in 1941, issued a report proposing changes in the law. Among them were provisions for the recording of all patent agreements with the patent office, so that secret, improper and illegal agreements might be exposed; for the cancellation of patents which later information showed should not have been issued; for a public register of patents under which the owners were willing to grant licences on reasonable terms; for establishing an objective test for the patentability of an invention on the basis of its value in advancing the arts and

sciences; and for the designation of the court of customs and patent appeals as the sole tribunal to review the denial of a patent by the patent office. Congress, however, did not enact these proposals. But the rules of practice in the patent office were revised in 1945.

The Atomic Energy act of 1946 prohibited the granting of patents for any invention or discovery useful solely in the production of fissionable material; required that such inventions or discoveries be reported to the commission created by the act; and authorized the commission to take over and pay just compensation for such inventions and discoveries. Another 1946 enactment temporarily extended time for filing patent applications in connection with rights which lapsed during World War II.

Trade-mark decisions exhibited the same general emphasis on the public interest as in the patent cases. That interest could best be served through the relatively free play of competition, the courts frequently said. They were therefore inclined to be less generous in protecting claimants against the infringement of trade-marks and names than in previous periods.

The entire law of trade-marks was revised by the Lanham act, passed by congress in 1946 to become effective July 5, 1947. This new statute codified all trade-mark laws, extended trade-mark protection to the identification of services as well as goods, increased the benefits derived from registration and gave trade-marks an independent status as property. Among other innovations was the right to register sound trade-marks such as the musical "signatures" identifying radio program sponsors.

The registration of copyrights of prints and labels was transferred on July 1, 1940, from the patent office to the Library of Congress, thus ending the last connection of the patent office with copyrights. Efforts to get congress to modernize the copyright laws by extending more adequate protection to creative material published through motion pictures, radio and television, were unsuccessful. Amendments in 1940 covered the renewal of copyrights on contributions appearing in periodicals and the prevention of importation of infringing material. A further amendment in 1941 provided for the preservation of the rights of authors threatened with loss of protection caused by disruption of communications during the war emergency. The rules and regulations for the registration of copyrights were amended in 1942. (See also COPYRIGHT; PATENTS.)

Reconversion.—Congress in 1944 enacted a series of laws designed to control the change-over from war to peacetime production and to ease the strain of the readjustment upon industry, farmers and servicemen. The disastrous effects which might follow the unregulated termination of thousands of war contracts and subcontracts were provided against in the Contract Settlement act, which created the Office of Contract Settlement to work out speedy and equitable final settlement of claims under terminated war contracts and adequate interim financing during such settlement. The Servicemen's Readjustment act (G.I. Bill of Rights) was designed to help veterans re-establish themselves in civilian life. (See section War Powers and Controls, below.)

The Surplus Property act set up machinery to handle the disposal of war plants, surplus agricultural commodities, real estate and other goods no longer needed for war purposes. This job was first assigned to the Surplus Property board, which was later replaced by a single administrator. On Feb. 1, 1946, the Surplus Property administra-

tion was merged with the War Assets corporation, a subsidiary of the Reconstruction Finance corporation; and as of March 25, 1946, the War Assets administration assumed the functions of the War Assets corporation.

The War Mobilization and Reconversion act established the Office of War Mobilization and Reconversion, headed by a director, with authority over the previously created Office of Contract Settlement, the Surplus Property board and the Retraining and Re-employment administration. Policies for demobilization and reconversion laid down by the act included provisions that members of the armed forces should not be retained in service for the purpose of preventing unemployment or to await opportunities for employment; that contracting agencies should terminate contracts as soon as their production was not needed for the war and should not continue performance merely to provide employment; that the termination of war contracts should be integrated and synchronized with the resumption of production for civilian purposes; and that there should be no discrimination against small business concerns either in permitting the resumption of nonwar production or the allocation of materials to them for that purpose. The act also provided for advances by the government to state unemployment funds and to state agencies for the construction of public works, not including hous-

Shortly after the end of hostilities in 1945, the president stated that reconversion policies would be: (a) to assist in maximum production of goods and services for domestic and foreign needs through allocations of materials, conversion of war plants and job placement of war workers and veterans; (b) to continue economic stabilization by using the powers conferred under the Emergency Price Control and Stabilization acts of 1942, subject to reasonable modification, and (c) to move as quickly as possible toward removal of price, wage, production and other controls and the restoration of collective bargaining and a free market.

Certain war agencies were terminated at once, and the functions of others were shifted to more permanent departments. Among the agencies abolished were the Office of War Mobilization, the War Manpower commission and the War Production board. The duties and powers of the latter were turned over to the newly created Civilian Production administration. On Jan. 4, 1946, the president appointed a director of liquidation in the Office for Emergency Management to expedite the closing out of war agencies; and on Dec. 12, 1946, the president abolished the Office of War Mobilization, the Office of Price Administration, the Civilian Production administration, the Office of Economic Stabilization and the National Wage Stabilization board, transferring most of their remaining functions to the Office of Temporary Controls headed by the federal works administrator.

Although the reconversion program was directed toward terminating war agencies as rapidly as possible, the war's end did not mean the end of all emergency laws. The attorney general announced that federal statutes effective only "in time of war," "during the present war" or "for the duration of the war" would remain alive until the signing of a formal peace treaty, unless terminated sooner by appropriate government action. Statutes effective until "the end of the emergency" or "the cessation of hostilities" could be terminated only upon proclamation by the president. Such a proclamation, announced on the last day of 1946, had the effect of terminating 20 emergency laws at

once, 15 at the end of 6 months thereafter, 10 at the end of 1 year, and 8 at the end of periods of more than 1 year.

Priorities, allocations, rationing and price and rent controls continued to a limited and diminishing extent during the reconversion period under policies laid down by the president, namely: the expansion of the production of materials in short supply; the granting of priorities to break bottlenecks which impeded the reconversion process; the control of inventories to avoid hoarding and unbalanced distribution; and the allocation of scarce materials necessary to the production of low-priced items required for the success of the postwar stabilization program.

Priority and allocation powers were in general continued until March 31, 1947, and the allocation of building material until June 30, 1947, through the extension of the Second War Powers act in 1946. Food controls were ended except the rationing of sugar and rice and except the controls exercised by the secretary of agriculture over food production and distribution in order to permit the allocation of food to famine areas and the equalization of domestic shortages. Construction priorities were assigned to the housing expediter under the Veterans Emergency Housing act of 1946. (See section *Housing*, above.)

The Emergency Price Control act expired on June 30, 1946. After a brief hiatus, during which the Office of Price Administration continued to exercise some powers under the Second War Powers act, the president on July 25, 1946, signed an act extending rent control and limited price control until June 30, 1947, with provisions for the rapid decontrol of prices. Price ceilings were removed by the end of the decade except as to sugar.

In response to pressure for a "full employment" law. congress adopted a compromise measure, the Employment act of 1946, declaring it to be the national policy to coordinate and utilize all functions and resources to create and maintain conditions promoting maximum employment, production and purchasing power. It required the president to report to each session of congress on the economic condition of the nation with specific recommendations. It also created a council of economic advisers to assist the president in preparing such reports and a joint committee of senators and representatives to consider the president's recommendations. (See also War Production.)

Social Security and Health.-In 1937 the U.S. supreme court in a series of decisions made social security legally safe by approving the Social Security act of 1935. This major feature of the New Deal plan to banish the fear of want provided protection against dependency due to unemployment, old age and other causes. It set up a system of unemployment insurance, financed through co-ordinated federal and state laws imposing taxes on employers based on the amount of wages paid in certain employments. Secondly, it created a purely federal system of old-age and survivors' insurance financed through a tax on employers and deductions from wages. A third section of the law authorized grants to the states for aid to dependent children, maternity and child welfare, public health work and the needy blind. The supreme court upheld the pay roll tax on employers for the support of unemployment compensation as a proper excise tax and not an illegal coercion of state governments (Steward Machine Co. v. Davis, 301 U.S. 598). The court further ruled that state unemployment compensation laws, keyed into the federal system, were constitutional (Carmichael v. So. Coal and Coke Co., 301 U.S. 495); and it also approved the old-age benefits feature, including the taxes imposed to support it (Helvering, etc. v. Davis, 301 U.S. 619).

The application of this new legislation required inter-

pretation by the courts. Bonuses, commissions and board and lodgings furnished to employees were generally held to be wages. Disputes over the definition of the employment relationship also led to much litigation. The trend was to apply common-law concepts in determining whether a person was an employee or an independent contractor. Thus the absence or presence of control, both over the result of his work and the method of achieving it, was often held to be a decisive factor. Absence of such control, however, was not always held to exclude a case from operation of the statute. The courts tried to look behind the contract between the parties to their actual relationship.

Social security for railroad employees was provided by separate enactments. The Railroad Retirement act of 1937 assured annuities to retired railroad workers and their dependents. The Railroad Unemployment Insurance act of 1938, amended in 1939, set up a pooled-fund system of unemployment insurance for the same group. Administration of both statutes was assigned to the Railroad Retirement board.

Congress also expanded and strengthened the U.S. public health service through two enactments in 1939, one establishing a National Cancer institute and the other regulating the sale of viruses, serums, toxins and antitoxins. The Public Health Service act of 1944 revised and consolidated federal laws relating to public health and reorganized the PHS, bringing it under the administration of the Federal Security agency. The public health service was further supplemented by the National Mental Health act of 1946 establishing the National Institute of Mental Health for research and development of more effective methods of preventing mental disease. The act also authorized grants to the states to aid them in similar work. Agitation for extending social security to include health insurance provisions found expression in the Murray-Wagner-Dingell bill, which failed of passage.

Other social security legislation in 1946 included: (1) amendments to the Railroad Retirement act, which increased the tax rate, made changes as to benefits and eliminated certain inequities; (2) amendments to the Social Security act enlarging and extending certain provisions; (3) passage of the Employment act, which directed the president to make annual reports on the economic condition of the nation to congress, set up an economic council to assist in the work and announced it to be the natural policy to promote free competitive enterprise and maximum employment, production and purchasing power; and (4) the National School Lunch act, which provided for federal grants-in-aid to assist the states in establishing and operating a nonprofit school lunch program. (See Social SECURITY.)

Taxation.—Expanding governmental activities, federal, state and local, brought more and stiffer tax laws with steeply rising rates and new devices for augmenting revenues. Hundreds of thousands of persons who had never before directly felt the burden of government costs were drawn into the army of taxpayers. Efforts to avoid the impact of mounting levies resulted in a stream of litigation which poured through administrative tribunals and the courts in steadily increasing volume with rulings continuing heavily in favour of governmental agencies against the contentions of taxpayers.

Congress repeatedly altered and expanded the federal tax structure. The Revenue act of 1937 was aimed at closing loopholes for tax avoidance through personal holding companies, incorporation of yachts and country estates, creation of multiple trusts for relatives and dependents, husband-and-wife and parent-and-children partnerships, and wife in communityproperty states. The Revenue act of 1938 practically eliminated the un-

pension trusts and division of income between husband

distributed profits tax on corporations (enacted in 1936), revamped provisions relating to the capital gains and losses of corporations, gave limited recognition to the "last-in-first-out" method of inventory valuation and relaxed the penalties against personal holding companies.

In 1939 the federal revenue laws were consolidated into a code. The Public Salary Tax act of 1939 declared the salaries of officers and employees of states and their subdivisions to be income taxable by the federal government and permitted the states in turn to tax the salaries of federal officers and employees. In the same year the supreme court held that the salaries of federal judges were subject to income taxes (O'Malley v. Woodrough, 307 U.S. 277), overruling a 1920 decision. Other 1939 amendments relieved corporations from certain provisions which had been criticized as "business deterrents," extended temporary excise taxes and postal rates, prohibited sale of information obtained from tax returns and gave all taxpayers the privilege of using the "last-in-first-out" method of valuing inventories.

In 1940 the pressure of defense preparations was brought home to taxpayers with the broadening of taxes on individual incomes, the stiffening of surtax rates on middle income brackets, the imposition of a defense tax and excess profits taxes and other provisions designed to increase federal revenues. But this was only a foretaste of more drastic levies to follow. The defense and lend-lease program inaugurated an era of the heaviest taxation in U.S. history. The provisions of the 1941 revenue laws included the reduction of exemptions on individual incomes from \$2,000 to \$1,500 for married persons and heads of families and from \$800 to \$750 for single persons, the integration of the defense tax with the surtax, adoption of a simplified tax schedule for individuals with incomes of \$3,000 or less, the increase of excess profits tax rates and removal of the tax exemption feature on federal obligations issued after March 1, 1941. The 1942 Revenue act brought another sharp increase in income tax rates and a lowering of exemptions. Some previous inequities were adjusted by provisions making alimony deductible by the husband and taxable to the wife, introducing new carry-over provisions and granting relief from hardships imposed by war.

The pay-as-you-go system went into effect under the Current Tax Payment act of 1943, which provided for payment of income and victory taxes for the current year in quarterly instalments and required certain employers to withhold (on behalf of the government) 20% of wages and salaries in excess of exemptions to apply on the taxes of employees. To lighten the burden of changing over to a current basis, taxpayers were forgiven 75% of their 1942 or 1943 tax, whichever was smaller. An anti-windfall provision cut down the amount of forgiveness on large incomes resulting from war conditions. Special exemptions and allowances were given to members of the armed forces. Congress further revised its tax program with the passage, over the president's veto, of the Revenue act of 1943. which eliminated the individual earned-income credit, required certain exempt corporations to file information returns, increased the excess profits tax exemption and the rates, increased postal rates and certain excise taxes and made other changes.

In 1944 congress tried to simplify the problems of taxpayers in the less-than-\$5,000 income group by providing

short cuts for making returns, changing the amount and method of computing exemptions, rewriting the definition of dependents by eliminating the age limit and the head-of-the-family status, granting an optional standard deduction in lieu of all other deductions and changing the with-holding provisions. The victory tax was repealed, but the rates and incidence of the normal tax and surtax were rearranged to effect about the same impact on the majority of taxpayers as under the previous law.

With the passage of the Revenue act of 1945, congress granted the first tax cut in 16 years, to become effective in 1946. The excess profits tax was repealed. The \$500 income tax exemption for each individual, his spouse and each dependent, previously applicable only to the surtax, was extended to the normal tax. The surtax rate on all brackets was reduced by at least three percentage points. The normal tax and surtax were further reduced by 5%. The active service pay of the enlisted personnel of the armed services was exempted from income taxes, effective retroactively to all years beginning after Dec. 31, 1940, to the end of the war as proclaimed by the president. Preservice taxes on earned income for any "war year" were made payable over a three-year period. The capital stock tax and all excess profits taxes on corporations were repealed as of Jan. 1, 1946. The normal tax on corporation incomes was retained, but surtax rates were decreased from a range of 10%-16% to 6%-14%, depending on the size of net income. The previous freezing of social security taxes at 1% both for employees and employers was extended to the end of 1946. The \$5 auto use tax was repealed.

The federal government was not alone in its efforts to increase revenues. States and municipalities joined the chase to capture more of the taxpayers' dollars. Licensing fees and service charges for recreational facilities and public parking privileges multiplied. Some cities enacted income tax laws.

The courts passed upon innumerable technical phases of the complicated tax structure. In general, legal devices for the avoidance and reduction of taxes fared badly. The supreme court held that the entire corpus of trusts established by decedents while living were subject to the federal estate tax where the settlors had retained "strings" to the disposition of trust funds under certain contingences; closed the door on the use of a single premium life insurance and annuity contracts as a means of avoiding estate taxes where the insured retained a reversionary interest; blocked attempts to escape the federal gift tax through transfers of property by taxpayers to their intended wives in connection with antenuptial agreements; and barred family partnerships as a means for dividing income for tax purposes where the wife had not contributed substantially to the partnership in capital or services. Nor would the court countenance the attempt of the Oklahoma legislature to lessen the impact of federal income surtaxes on its citizens through the passage of an Oklahoma community property law. Such laws, adopted by a number of western states, provided for a division of family income between husband and wife for legal purposes, thereby giving citizens of such states an income tax advantage. The Oklahoma statute was defective because it was optional. It did not actually give the wife a legal claim to half of her husband's salary (Commissioner v. Harmon, 65 S. Ct. 103 [1944]). The court also upheld amendments of 1942 to the federal revenue laws subjecting the entire value of "community property," including the proceeds of insurance paid for by the decedent, to the federal estate tax (Fernandez v. Weiner, 66 S. Ct. 178 [1945]).

In its much-discussed 1943 ruling in the *Dobson* case (320 U.S. 489) and subsequent decisions, the supreme court held that it would not review tax court rulings unless it could identify a clear-cut mistake of law.

The high court also showed marked reluctance to interfere with state taxation. Imposition by states of income and excise taxes on out-of-state corporations, when based on business done within the taxing state, were approved by the court in a wide variety of cases. Sales and use taxes were similarly sustained, even though affecting interstate commerce, subject to certain finely drawn distinctions, depending on the wording and operation of the particular statute at issue. Interstate trade barriers were considerably strengthened by such decisions. The supreme court also affirmed the right of states to levy heavier taxes on foreign corporations doing business within their borders than on domestic corporations doing similar business. Multiple taxation of the same intangibles by different states was approved in a ruling "that there is no constitutional immunity from the taxation of intangibles in more than one state." The principle of intergovernmental tax immunity between federal and state governments showed signs of disintegration under the effects of supreme court buffeting. A new doctrine of permitting reciprocal nondiscriminatory taxation was announced. The court also upheld the special taxation of chain stores on the ground that it was not discriminatory in view of the type and scale of the business and its competitive advantages. (See TAXATION.)

Wages and Hours.—The fight of labour to establish a minimum standard of living resulted in the passage of the Fair Labor Standards act in 1938. It was designed to improve the lot of workers by means of a floor for wages and a ceiling for hours. The act, by its terms, applied to all employees "engaged in commerce or in the production of goods in commerce." It created a wage and hour division in the department of labour. The new law also provided for industrial committees to co-operate with the wage-hour division, and prohibited the transportation in interstate commerce of goods produced by oppressive child labour. Employers were required to pay one and one-half times regular wage rates for overtime work.

In two 1941 decisions, the supreme court upheld the wage-hour law as a proper delegation of legislative power under the commerce clause of the constitution (U.S. v. Darby, 312 U.S. 100); and Opp Mills v. Adm'r., 312 U.S. 126). In the Darby case the court approved the child labour provisions of the F.L.S.A., overruling its 1918 decision in Hammer v. Dagenhart, 247 U.S. 251, which had invalidated an earlier statute prohibiting the transportation in interstate commerce of goods produced by child labour. In another case the court said that the application of the F.L.S.A. to the newspaper business did not violate press freedom.

The supreme court approved a fairly liberal construction of the F.L.S.A. coverage. Application of the law depended upon the nature of the activity of the workers rather than upon the business of the employer. In determining whether a particular type of activity came within the act, the court applied the test of the "continuity of the flow of goods in interstate commerce." Among many other rulings, the court held that the act covered employees of a company operating a toll road used for the passage of goods in interstate commerce; labourers in a machinery repair shop which mainly serviced interstate commerce; employees in the central office of a chain grocery store, from which some goods were shipped to out-of-state stores; em-

ployees who handled intrastate deliveries of paper which was procured outside the state and a night watchman in a veneer plant whose output was shipped in interstate commerce, even though he did not take any physical part in producing or shipping veneer. In the latter case, the court stressed the fact that the primary purpose in employing the watchman was to get lower insurance rates. This and other circumstances showed that the watchman made "a valuable contribution to the continuous production of goods." His work had that "close and immediate tie with the process of production for commerce" which entitled him to the protection of the statute. This tie was held in 1944 to be close enough as to building service workers in the administrative office of an interstate milk distributor (Borden v. Borella, 325 U.S. 679). But in 1945 service workers employed by a New York office building comporation were held not subject to federal wage-hour control. The fact that more than one-third of the office space was used by concerns engaged in interstate commerce did not seriously involve them in the production of goods for such commerce. In 1946, however, the court found the F.L.S.A. applicable to employees engaged by a local company to wash the windows of buildings operated by concerns producing goods for interstate commerce.

Numerous decisions established the method of computing time and the basis of overtime for all types of employees: hourly, salaried, irregular or fluctuating, piece workers, home workers. The supreme court held that the time spent by miners of iron and coal while travelling underground between the portal of the mines and the "working face" was working time for which they had a right to be paid under the Fair Labor Standards act. Such travel was "work," since it was on the mining company's property, was under its control and used up the energy of the miners in the interest of their employer (Muscoda case, 321 U.S. 590; Jewell Ridge Coal case, 325 U.S. 161). Similarly, the court held in 1946 that time spent by employees of a Michigan pottery company in reaching their places of work on the employer's premises after punching time clocks must be classified as work for which they were entitled retroactively to overtime pay under the F.L.S.A. (Anderson v. Mt. Clemens Pottery Co., 14 LW 4434). This decision precipitated a nation-wide wave of "portal-toportal" wage suits which involved claims running into billions of dollars.

The supreme court also ruled in favour of employees of a soap manufacturing company who served as auxiliary firemen on the company's fire-fighting crew. The time they spent merely waiting for fire calls was working time for which they were entitled to pay on an overtime basis. Such fire duty was part of the production of goods in interstate commerce (Armour & Co. v. Wantock, 323 U.S. 126).

In a 5 to 4 decision, the supreme court found that employment of underage messenger boys by the Western Union Telegraph company did not violate the child labour provisions of the wage-hour law. While messages might be considered "goods," the defendant did not "produce" or "ship" them in interstate commerce (Western Union v. Lenroot, 323 U.S. 490).

The F.L.S.A. was reinforced by various types of wage-hour controls in all of the more important industrial states. The Washington state law requiring the payment of a minimum wage to women sufficient for their decent maintenance was sustained in 1937 by the U.S. supreme court in West Coast Hotel Co. v. Parrish, 300 U.S. 379, which overruled its 1923 ruling in Adkin v. Children's Hospital, 261 U.S. 525. (See WAGES AND HOURS.)

War Powers and Controls.—The lessons of World War I

were-taken to heart by war and navy department officials who prepared military and industrial mobilization plans for use in the event of another war. Authority to carry out such plans resided in congress and the president under the emergency and war powers conferred by the constitution, but it was obvious that the proper exercise of such powers would require implementation through new federal statutes. Existing war laws, such as the Espionage act and Trading with the Enemy act, both of 1917, were useful but far from adequate to support the contemplated program.

The first emergency law was the Neutrality act adopted in Nov. 1939, which confirmed President Roosevelt's earlier proclamation of U.S. neutrality and a limited national emergency made shortly after the outbreak of war in Europe. The act authorized the president by proclamation to declare when a state of war existed between foreign states, to define combat areas and to issue regulations with reference to foreign commerce. It forbade trade with belligerents, restricted the use of U.S. ports by armed vessels of foreign states, set up a National Munitions Control board and required the registration of arms makers, exporters and importers.

The success of the German, Italian and Japanese war machines in their aggressions against other nations made it clear that the United States should prepare to defend its own territory. Mobilization and training of manpower for military and naval purposes was therefore begun under the Selective Service and Training act of Sept. 16, 1940. On May 27, 1941, the president proclaimed an unlimited national emergency, declaring that the objective of the axis belligerents included the overthrow of democratic order and world-wide domination of peoples and economies. He called upon all citizens, workmen and employers to dedicate themselves to production for national defense. By act of Oct. 16, 1941, the president was authorized to requisition military or naval equipment, machinery, tools or materials needed to manufacture or operate such equipment for the defense of the United States upon payment of fair compensation.

On Dec. 8, 1941, war was declared against Japan, and on Dec. 11 against Germany and Italy. On Dec. 18, 1941, congress passed the First War Powers act, empowering the president to redistribute the functions of government agencies, except the general accounting office; to empower agencies to enter contracts and make payments in connection with the war effort; and to issue and enforce regulations freezing foreign credits and to exercise censorship over communications between the United States and foreign countries. The act included elaborate amendments of the Trading with the Enemy act, especially with reference to the powers and duties of the Alien Property Custodian. It was to remain in force "for six months after the termination of the war."

The Second War Powers act, adopted May 27, 1942, gave the Interstate Commerce commission emergency powers over motor and water carriers, authorized the requisitioning of property by the war and navy departments, established priorities for delivery of materials under war contracts and contained provisions for free postage for servicemen and other matters. The act was to remain in force until March 21, 1947. Its life was later extended to June 30, 1947.

The two war powers acts were supplemented by other statutes and innumerable executive orders and agency regulations. The nation was thereby democratically selfregimented for total war against the dictator-regimented

axis powers. Controls covered every phase of life, including manpower, production, distribution, foreign commerce, communications, transportation, finance, consumer credit, housing, food, fuel, rents, prices, wages, hours, scientific research and medical services. Various security regulations were enforced, including blackouts, the establishment of restricted areas and relocation of persons of Japanese descent. A civilian defense system was also set up.

This mobilization of economic and human forces affected every individual. The public in general accepted the resulting mass of regulations as a necessary part of prosecuting the war successfully. Businessmen took over the increased load of paper work imposed by war laws, including the renegotiation of their contracts with the government, with little complaint. The government adopted a policy suspending antitrust prosecutions as to war industries. Labour and management carried on under a voluntary no-strike-no-lock-out pledge.

The history of the creation of war agencies and shifting of their powers from one bureau to another was too complicated to report in detail. The general tendency was to carry on the war effort through new agencies rather than to assign emergency duties to existing government departments. Disputes frequently arose between agencies over their respective powers and functions since their duties and jurisdiction were not always clearly defined, either by statute or executive order. Most war agencies assumed such powers as expediency indicated were desirable in order to perform the work assigned to them; and for the most part these powers were not contested, and when contested, were generally sustained by the courts. (See also WAR AND DEFENSE AGENCIES.)

Foreign Trade.—The Trading with the Enemy act of 1917 (as amended in 1933, 1940 and 1941) became effective again at the outbreak of World War II. It provided the basis for the seizure of axis property and control of foreign trade. The Office of Alien Property Custodian was reestablished in March 1942 by executive order. The custodian exercised the powers conferred under the 1917 act and new supplementary legislation. All axis-owned business and property vested in the custodian. The treasury department exercised control over foreign exchange, transfers of credit and exports of currency, through freezing orders. Particular transactions were permitted by special licence. Trade was barred not only with axis nations but also with firms in Europe and Latin America known to be dummies for the axis powers.

Under pressure from the department of justice, certain U.S. corporations dropped directors and other officials who had represented axis interests through cartel systems. Similarly, cartel controls over patents, especially in the chemical and dye industries, were severed through consent decrees in antitrust suits.

Upon the outbreak of war usable axis vessels in U.S. harbours were requisitioned. In Jan. 1942 the operation of all vessels in foreign trade was assigned to the new War Shipping administration; and in April of the same year all shipping was requisitioned for war purposes. Authority for government operation of the merchant marine was derived from the First War Powers act and previous laws.

Radio, telephone and telegraph came under rigid control, and strict censorship was established over all communications with points outside the United States.

Manpower.—On April 18, 1942, the president established the War Manpower commission in the Office for Emergency Management. The chairman of the new agency was directed to formulate a program for the most effective mobilization and maximum utilization of the nation's manpower; to review the requirements for military, agricultural and civilian manpower; and to allocate available manpower in accordance with relative needs. Certain agencies, including the Selective Service system, were ordered by the president to conform to the directives of the WMC as to the classification and use of manpower. The U.S. Employment Service and other agencies dealing with employment were transferred to the WMC. Subsequent executive orders required the war and navy departments to determine the number of men needed each month under the draft and made the employment or retention of employees in war production subject to WMC regulations. The WMC was thus vested with power almost equivalent to conscription of labour, since it was enabled to freeze employees in war plants to their jobs.

In carrying out its work, the WMC devised a "manning table," which listed the types of workers engaged in essential war production activities who should be granted deferment under the Selective Service system and provided a basis for the withdrawal of such workers as were capable of military and naval duty at a rate that would permit others not qualified for such duty to be trained to replace those withdrawn.

The WMC was terminated Sept. 19, 1945. (Also see section Labour Relations, above.)

Price, Rent and Wage Control.-Vigorous efforts were made to avoid the inflationary spirals of World War I. The Office of Price Administration was created by executive order as part of the defense program on April 18, 1941, but it did not receive statutory support until the passage on Jan. 30, 1942, of the Emergency Price Control act, which gave the price administrator power to establish such price ceilings as he deemed proper to prevent unwarranted price rises, except that maximum prices on agricultural products could not be fixed below the highest level determined by certain bases—one being 11000 of parity with industrial prices. Agricultural price ceilings were sub ject to the approval of the secretary of agriculture. The authority of the price administrator was backed by provisions (1) that wilful price violations would be criminal offenses, (2) that the administrator might obtain injunctions against violations, (3) that persons charged with violation would be subject to suit for triple damages and (4) that the administrator might license persons to sell products subject to maximum prices and if there were violations he might bring suit to suspend such licences. The administrator was also given the right to investigate and to issue subpoenas.

On April 28, 1942, the price administrator issued a general maximum price regulation as part of a seven-point anti-inflation program announced by the president. This regulation, which came to be known as "General Max," was a blanket freeze order on the prices of all commodities. It provided two kinds of controls: (1) that each seller of each product must abide by the prices he received at a fixed date in the past and (2) that definite price ceilings must be adhered to on all sales of particular products by whomever they were sold.

The price control act created an emergency court of appeals to review OPA orders and provided that such review could be had only in that court and the supreme court. The latter court ruled that this limitation properly excluded other federal courts from reviewing price orders (Lockerty v. U.S., 319 U.S. 182 [1943]). The high court also upheld the delegation by congress to the OPA of broad authority to fix prices and rents, since adequate

standards for determining the occasions for the exercise of such authority had been laid down (Yakus v. U.S., 321 U.S. 414 [1944]; Bowles v. Willingham, 321 U.S. 503). The administrator's power to suspend dealers guilty of black market operations and cut them off from further supplies of commodities was also sustained by the court (Steuart & Bro. v. Bowles, 322 U.S. 398 [1944]). But the price administrator did not have an absolute right to the issuance of an injunction restraining future violations of price ceilings, because that remedy rested within the sole discretion of the court (Hecht Co. v. Bowles, 321 U.S. 321).

The price control act was amended in 1943 by provisions requiring personnel to have business experience and limiting OPA power in setting standards and imposing grade labelling. The act, as amended and extended, expired on June 30, 1946. The first proposal of congress to extend controls was vetoed by the president, but on July 29, 1946, he signed a redrafted extension measure which continued rent controls and the power to control prices until June 30, 1947, with provisions for decontrolling prices as rapidly as possible. By the end of 1946, all price ceilings were lifted except on sugar and rice.

Wage controls were also instituted by the federal government as part of its general policy of checking war inflation. The Wage and Salary Stabilization act adopted on Oct. 2, 1942, as an amendment to the price control law, directed the president to order the stabilization of prices, wages and salaries affecting the cost of living at the Sept. 15, 1942, level, as far as practicable. It provided that no employer should pay and no employee receive wages or salaries in contravention of the regulations laid down by the president. The day after the passage of this act the president by order created the Office of Economic Stabilization in the Office of Emergency Management to formulate a national economic policy relating to control of civilian purchasing power, prices, rents, wages, salaries, profits, rationing, subsidies and relative matters to prevent avoidable increase in the cost of living.

Under executive orders and OES regulations the administration and enforcement of the wage stabilization program was assigned to the NWLB and the Salary Stabilization unit of the bureau of internal revenue, except as to agricultural labour, which was left to the war food administrator, and railway labour, which was governed by the National Railway Labor panel. Authority to grant increases was limited to those necessary to correct inequalities and gross inequities, eliminate substandards of living and aid in prosecution of the war.

On April 8, 1943, President Roosevelt issued his "hold-the-line" order, forbidding wage increases except such as were necessary to correct substandards of living and those allowable under the "Little Steel formula" which had been applied by the NWLB. This formula provided for increases up to 15% above wages paid on Jan. 1, 1941, which was the estimated rise in the cost of living between that date and May 1, 1942.

Limitations on wage and salary increases were substantially relaxed by executive order on Aug. 15, 1945, and on Sept. 20, 1945, the OES was terminated and its work was turned over to the stabilization administrator in the Office of War Mobilization and Reconversion. On Dec. 31, 1945, the president created the National Wage Stabilization board in the department of labour and transferred to it the wage stabilization functions of the NWLB; and on Feb. 21, 1946, the OES was re-established. This chapter was closed, however, on Nov. 9, 1946, when all wage and salary controls were lifted.

Priorities, Allocations and Rationing.—The production

of guns, planes, tanks, ships and other war munitions necessarily curtailed production for civilian use. War needs had to be filled first, and even in civilian production preference had to be given to the more urgent needs of everyday living. The first step was taken when the president in Dec. 1941 delegated to the newly created Office of Production Management the authority to requisition war materials. Shortly thereafter, the job of requisitioning and determining priorities and allocations was assigned to the War Production board established in the Office for Emergency Management. The WPB was also directed to determine policies and procedures in respect to war procurement and production.

The WPB administered priorities and allocations under the "controlled materials plan" which aimed at assuring a balance between supply and demand in such a way as to make materials available to consumers in the quantity and form and at the time and place required to meet authorized programs and schedules. The plan provided for the division of available controlled materials among the various claimant agencies in the interests of the most efficient use of the materials in war production, as well as the further division of such supplies between primary and secondary consumers. Newspapers and magazines were cut in their consumption of print paper, processed foods were placed under rationing at consumer levels and inventories of consumer goods in the hands of large retailers and wholesalers were curtailed. Each request for available materials had to be weighed carefully against the needs of the war program. Simplification and standardization of innumerable commodities and elimination of many others released millions of tons of critical materials for military use.

Rationing of consumers' goods was assigned by the WPB to the OPA, and the civilian rationing of food was also assigned to the same agency by the secretary of agriculture, who had been given full authority over the nation's food program. Certain commodities, such as automobiles, typewriters and rubber, were frozen. (See Prices; Rationing.)

Public Contracts.—The negotiation and renegotiation of contracts for the production of war materials became a major government activity. The general policy of paying on a cost-plus-fixed-fee basis was established during defense preparations under laws relating to naval, army and marine construction. The two war powers acts empowered the president to authorize any government agency engaged in war work to enter contracts and make payments relating thereto, and contained various regulatory provisions. War contracts in general contained strict penalties for delays but also assisted contractors through provisions for progress payments and advances. The government further undertook to indemnify contractors against suits for patent infringements in order to avoid delays which might be caused through doubts as to conflicting patent claims.

Control of profits was instituted through the renegotiation process in the hope of preventing the recurrence of excessive war profits taken under cover of law during World War I. Under the Renegotiation act of 1942, as amended, government departments were directed to insert in all war production contracts involving amounts of more than \$100,000 provisions for renegotiation of the contract price with contractors and subcontractors for the purpose of eliminating excess profits. Government agencies were authorized to withhold any part of the contract price found through renegotiation to have been excessive and to recover such amount if already paid. A policy was adopted of allowing a greater profit margin to contractors who

succeeded in lowering the cost of war goods through greater production efficiency.

Discretion was vested in the army, navy and maritime commission under the First War Powers act to disregard prior laws concerning government contracts, except such laws as the Walsh-Healy and Davis-Bacon acts, containing minimum wages, maximum hours, health and safety provisions and banning child labour, which remained in full force. The requirement that clauses against racial discrimination in employment practices be written into government contracts was announced as mandatory, but no provision was made for enforcement.

The Contract Settlement act of 1944 provided for the speedy and equitable settlement of all claims arising from termination of war contracts by the government; and the War Contract Hardship act of 1946 authorized further relief from losses for supplies or services furnished to the government under war contracts. The Anti-Kickback act of 1946 extended the provisions of a similar 1934 law by prohibiting the practice of subcontractors of paying fees or kickbacks or making gifts to employees of "cost-plus" primary contractors. (See also War Production.)

Selective Service and Veterans.—Every male resident of the United States between the ages of 18 and 65 years was required to register under the Selective Training and Service act of 1940. Those between 18 and 45 years of age were made liable for training and service in the land or naval forces. The act specified the method for selecting men and the order of their induction, provided exemptions for ordained ministers of religion, gave the president power to make rules deferring certain groups with dependents and contained provisions for the re-employment of veterans after their discharge. This basic draft law was amended from time to time by enactments extending its operation, changing provisions relating to age limits, exemptions, deferments and re-employment, and granting pay increases. It was also amplified by numerous rules and regulations.

On Oct. 17, 1940, congress passed the Soldiers' and Sailors' Civil Relief act, suspending the enforcement of civil liabilities against members of the armed forces. This act and its amendments contained various moratory provisions granting servicemen relief against court actions and against rent, instalment contract, mortgage and other financial obligations. It also provided for the issuance of government life insurance to persons in service.

The re-employment provisions of the Selective Service law and collateral enactments guaranteed to every veteran of the armed services and merchant marine the restoration of his former job or a job of like seniority status and pay, provided that his old job was not temporary, that he received a satisfactory discharge certificate, that he was still qualified for the job, that he applied for his old job within go days after discharge (or 40 days in case of veterans of the merchant marine) and that the employer's circumstances had not changed so as to make it impossible or unreasonable to reinstate the applicant to the same or a similar position. Re-employed veterans were also assured the restoration of all insurance and other benefits pertaining to their jobs when they entered service. Discharge of a re-employed veteran without cause within one year of his reinstatement was forbidden.

Administration of the provisions relating to re-employment of veterans was turned over to the director of selective service, who issued a handbook on the subject, advocating the view that a veteran had an absolute right to his old job or one of like seniority, status and pay, even

though this might displace an employee with greater seniority who had not seen war service. This superseniority doctrine was rejected, however, by the supreme count (Fishgold v. Sullivan D. & R. Corp., 66 S. Ct. 1105 [1946]).

Anticipating the war's end, congress in 1944 enacted the Servicemen's Readjustment act, popularly called the G.I. Bill of Rights. It declared the Veterans administration to be an essential war agency, entitled, second only to the war and navy departments, to priorities in personnel, equipment and material; authorized the administrator of veterans' affairs and the Federal Board of Hospitalization to expedite and complete additional hospital facilities for war veterans and to establish regional and branch offices; and appropriated \$500,000,000 for hospital facilities. The act provided protection for all veterans in filing claims for compensation, pensions and hospitalization and educational subsidies, subject to certain limitations, for those whose education or training was delayed or interrupted by entrance into service. The act further provided loans for the purchase or construction of homes, farms and business property; created a Veterans' Placement Service board to co-operate with the U.S. Employment Service; and provided readjustment allowances for former members of the armed forces who were unemployed. (See SELECTIVE SERV-ICE; VETERANS' ADMINISTRATION.)

Further legislation in 1945 and 1946 liberalized provisions for medical care and education, and loans to veterans; established a department of medicine and surgery in the Veterans' administration; granted terminal leave pay in the form of U.S. bonds to be issued to enlisted personnel to make up for lost furlough time; made other pay readjustments; and appropriated \$30,000,000 to provide specially equipped motor cars for disabled veterans.

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Europe

A variety of causes combined to make the years 1937–46 a period of great change and unparalleled development in law in Europe. First, the direct results of six years of world war on European legal systems and on the principles on which those systems were based, were no less remarkable than on other departments of life in which the ordinary citizen was vitally interested. Science, construction of every

means of transport, dietetics, medicine and surgery all profited, as always, by a speeding up of development when a major war was being fought, but this time law was not less affected. In law indeed the changes appeared even more remarkable and the development even greater when contrasted with legal developments over any period of similar length. War demanded greater development in laws to regulate life; the urgency with which improvements were devised in other spheres might have been equal, but in law it was more noticeable since regulation was never before so widely, so fundamentally and for so long a time necessary for the prosecution of the war. Law had to be brought up to date with a speed and an urgency hitherto associated only with wartime advances in medicine and science.

A second and scarcely less remarkable course of legal development in Europe was the particular state of social consciousness and the stage of political and civic advancement at the beginning of World War II. Before World War I there had been in only a few countries any radical signs of change in the social and political construction of European states; but in 1937 the huge soviet experiment was well on its way, Great Britain had had two Socialist governments, the Scandinavian countries had become established Socialist democracies, France was in a state of torment and weak vacillation as a result of multiparty govvelopments in the period 1937-46 would be more widely political systems later to end in disaster. The widespread political awareness, the higher educational standard and the better living conditions of the working man in every country and the increased ease of international communications of all types, provided a unique background for a war with its consequent developments, and a background in which for the first time law and laws were the concern of every individual. The growth of democracy throughout Europe between 1918 and 1937 made it certain that any developments in the period 1937-46 would be more widely felt and discussed by, and would more directly interest and concern, the individual man or woman in every land; but particularly was this true of legal developments, since law was the means of holding the balance between the rights of the individual and the requirements of his state, and since legal remedies and relief had become so much more widely available to all classes than ever before.

There were many minor causes for legal developments. A few examples were: the increase in the availability of wireless (radio) sets, in the literacy of European nations and in the circulation of newspapers, by all of which means easier publication and explanation of legal changes and their effects and speedier enforcement of new laws and punishments for their infringement were possible; the growth of humanitarian feeling with the consequent demands of public opinion in all countries for better treatment for the underdog and for means whereby the poorer could secure equal treatment with the rich; and the fact that totalitarianism in fascist countries necessitated great centralization of power in other countries at war with them and so forced into existence a temporary form of nationalization in many cases which easily could, and often was, converted after the end of the war into more permanent forms of central control of all important national assets.

Thus, there were ideal conditions in Europe between 1937 and 1946 for important fundamental and widespread legal developments. Developments in different countries varied in accordance with the individual changes of conditions, but there were remarkably clear divisions of Europe into groups of countries which developed legally along the same lines. The grouping depended on the effect on

each country of the war and in particular on the extent to which the country took part, the extent to which each country was invaded or threatened with invasion, and the extent to which the continuity of legal system of each country was broken by foreign domination or occupation.

Least affected were the group of neutrals, Portugal, Spain, Sweden, Switzerland and Turkey. The national as opposed to international developments were few in the neutral group of countries; they were confined to nationally protective measures designed strictly to enforce the central control of vital national resources and to ensure that the best use in the interests of the nation was made of export and import, trade facilities and currency. In Turkey, for example, an import regulation code came into force, together with an import licensing system. These countries, cut off from the war, none originally members of the United Nations organization and none subject to any swing of political opinion to the left, were not affected by the main causes underlying legal developments between 1937 and 1946, except solely insofar as they had to take steps for their own protection in currency and trade.

Another group comprised those countries which were invaded and occupied but afterward freed, such as Belgium, Czechoslovakia, Denmark, France, Greece, the Netherlands, Norway, Poland and Yugoslavia. Many of these countries aided continuity of legal systems by maintaining or forming an émigré government.

A third group was composed of the countries on the losing side in the war, which were invaded and occupied but most of which had at least begun to be freed by 1946 (Austria, Bulgaria, Germany, Hungary, Italy and Rumania).

The remaining group consisted of Great Britain and the U.S.S.R., both of which were threatened with, and fully prepared for, an invasion of their own soil extending to their capital cities, and both of which lost and later regained control of part of their territory: in the case of the former only the comparatively insignificant Channel Islands were lost, and in the case of the latter a vast stretch of territory, but these losses had the same effect on laws and legislation in that an unsuccessful threat was made to the security of the capital cities; steps for evacuation of the central government were taken and vast national efforts at self-defense called forth.

Supranational Developments.—While changes were taking place inside European countries, other important developments were occurring in the international sphere of law which concerned all countries. These were of a supranational rather than international character and were steps on the way toward the setting up of a central sovereign authority with powers over all the states which were members of the authority and which, by voluntary surrender of a part of their sovereignty, would give supranational sovereignty and effectiveness to the central authority. There were two developments of this nature: the establishment of the United Nations with a legal department, the International Court of Justice; and the setting up of an international criminal tribunal for war crimes which first sat at Nuernberg.

The International Court of Justice (q.v.) was established at The Hague where it took the place, made vacant for it, of the Permanent Court of International Justice. The latter, which drew its authority from the obsolete League of Nations, was closed down. The differences between the two were not startling; there was no break in the continuity of principles and system between the two courts.

The International Court of Justice was established to decide legal questions under the United Nations, but questions which were not essentially legal were to be referred to the Security council, which suffered from the difficulty that any one of the four permanent members could impose a veto on any resolution and so nullify a decision in advance. The division of questions into "legal" and "political" was generally felt to be a false and obstructive one, since any nation which wished to refer a question of vital international importance could, in effect, by claiming that the question was really "political," avoid the International Court of Justice altogether and take the question into the sphere of decision of the Security council, where one major friendly power could, by the veto, at any rate prevent any decision unfavourable to itself or its friends. If the Court of Justice was to function in international cases of any great importance it was necessary to establish it as a court of justice, not as a court of law.

In internal courts in any country, law as administered necessarily fell far short of justice as it ideally should be for two reasons: first, the time and expense which would have to be incurred to make and administer laws sufficiently detailed to give exact justice to all made it impossible to do more than secure fair treatment to all, not perfect treatment; and second, there was always the superior interest of the state to be considered and it might (often rightly) sway the court away from giving the fullest protection to the individual. These considerations did not apply to an international court of justice. To decide any question of importance the expense was great and to decide it with the greatest care and exactitude cost an inconsiderable amount more; the interest, too, corresponding to the interest of the state pulling against the individual, was the interest of the whole world, of humanity-in fact, it was absolute justice.

A Court of Justice, therefore, to which all questions of dispute among nations could be referred, freed from the strangling power of the veto, and deciding all questions on the basis of pure justice (and not of law) was required but was not produced by the United Nations. There were signs at the end of 1946 that the power of the court might be more widely based in the future but, as it actually was in 1946, the International Court of Justice was unable to deal with important international questions which had been put outside its jurisdiction, and so could only continue to render service to the world in a number of cases of lesser importance, just like its predecessor.

A far greater development was the setting up of the International War Crimes tribunal which first sat at Nuernberg. This was the first attempt to establish an international court for criminal cases (in which the person found guilty might be punished by death or imprisonment) as opposed to civil cases (in which the adjustment of rights between two parties is effected). Criminal cases previously had been tried in some country according to the law of that country, and a criminal who escaped from the jurisdiction of one country might or might not find himself tried for his crime in a second country, in accordance entirely with the laws of the latter. The waging of aggressive war first appeared as a crime recognized by law when this court was established; a further innovation was the fact that organizations, such as the German schutzstaffeln (the S.S.), could be found guilty as well as individuals. A curious result of this innovation was that a member of any guilty organization was prima facie guilty himself. This extension was not welcomed, for it appeared to many not in accordance with the highest standards of justice, but the idea had many parallels in countries of Europe at the time and was more apparently than actually unjust, if indeed it was unjust at all. The tribunal did not, however, deal only with the crime of waging aggressive war; it also dealt with other crimes, such as murder and breach of the internationally recognized code of warfare known as the Geneva and Hague conventions. Its jurisdiction was therefore to try individuals and organizations accused of all types of ordinary noninternational crimes (such as murder), of breaches of the rules of international warfare as recognized in 1939, and of the new crime. Its jurisdiction was exceptional only insofar as the new crime was concerned and in the trial of organizations in addition to individuals.

The sanctions behind the tribunal were the armed might of the victors in World War II. The judges were taken from France, Great Britain, the U.S.S.R. and the U.S.A. The president, Lord Justice Geoffrey Lawrence of England (ably assisted by the great English criminal lawyer and judge, Sir Norman Birkett), had a difficult task. The number of languages used and the length of the cases were minor difficulties compared with those of initiating a form of procedure acceptable to the four great nations and not incompatible with justice. In France a prisoner was at this time presumed guilty until he was proved otherwise; in Great Britain the reverse was true; in the U.S.A. much more demonstrative appeals by the prosecution were allowed; and in the U.S.S.R. it was the practice to prosecute only when a conviction seemed certain and usually for the prisoner, after long examination out of court, to confess at his trial. This was the first attempt at an amalgamation of these differing ideas of criminal justice and so caused much unfavourable comment in nearly all European countries. Since the practice and procedure was a compromise between those of four nations it was bound in some ways to differ from, and fall short of, the accepted principles of criminal justice in each, and it was on these divergences from national practices that a number of criticisms were based. Such criticisms were ill-founded and ignored the fact that any practice and procedure which wholly met the approval of any one national group of critics would by doing so depart even further from the practice and procedure acceptable to critics of other national groups. Other objections on the ground that the crime of waging war was invented after the criminals tried had committed it ignored the fact that before 1938 this crime was recognized by all fair-minded individuals throughout Europe and must have been recognized by the criminals themselves in 1939; an objection of this nature was therefore one which went to form only, not to substance or justice. Trials of all the major war criminals took place; and some were condemned to death, some to terms of imprisonment. The tribunal was an important and successful development of criminal law and the first application of international criminal law in Europe. (See WAR CRIMES.)

Occupied Countries.—The countries which were invaded in World War II naturally had many difficulties to overcome at the end of the war when the prewar government or its successor took back power from the foreign occupier. Collaborators had to be dealt with, a mass of imposed legislation sorted (some retained and the remainder of it abolished), new constitutions established and industrial law revised in the light of less fortunate economic circumstances and less material wealth. Some countries had evacuated their governments intact to England and were able thereby to maintain a useful continuity. Governments such as those of Norway, Czechoslovakia and the Netherlands in their temporary abodes in London were able to enact much

temporary law to deal with their own forces, their own merchant seamen and others of their nationals who were aiding the national efforts at survival from outside their homeland. Such legislation dealt with military matters and with the provision of temporary aids to citizens in their domestic affairs. Norway, for example, extended the laws of divorce so that persons in England might divorce wives or husbands in Norway even if the latter were ignorant that a divorce was being sought. Such legislation was transient, and its extensions were repealed on the return to normal conditions in 1945. Laws which dealt with the lorces of such countries differed in no way from what such laws would have been in the home countries had these not been invaded, except that the recognition by a proper power of the right of such émigré governments to legislate while on foreign soil and dispossessed of their whole country was an innovation and a break with international legal precedents. It was at once a recognition of the gravity of World War II and a step toward the acceptance of the interests of such countries as existing in, and vitally affecting, other countries with whom there had before been no mutual legal tie.

Countries on the other hand which were unable or unwilling to establish or support émigré governments maintained in some cases, as in Denmark and Yugoslavia, considerable powerful elements acting either through the occupation forces by skilful and intelligent twisting of the law (as in Denmark), or through powerful, fast-moving and well-organized guerrilla forces with a central and recognized controlling organization (as in Yugoslavia). In these cases, too, continuity was less broken, and it was not difficult to rebuild a legal system in the homeland since it existed in a part of the world throughout the war. Greece and Poland were unable to maintain continuity, since in the former case no centrally recognized authority continued in existence, and in the latter the authority which hoped to resume government was discredited and unable to return to its own country in 1945.

Where there was no continuity, extensive electoral and constitutional laws became necessary in 1945; to take an extreme example, France had, by the end of 1946, settled little more than the electoral laws and the form of its new constitution; all laws, other than necessary day-to-day legislation, had to wait for decisions on the constitution and for the establishment of a government which could remain in power for more than six months. At the other extreme of such states as did not maintain continuity of legal system were the Polish, Czechoslovak and Yugoslav republics. These attached less importance to constitutional laws and more to economic ones; this was partly due to proximity to the U.S.S.R. and partly to the far greater chaos of disorganization of material resources in which these states were left at the end of the war. The struggle for existence ended on the military plane but continued on the economic.

Czechoslovakia embarked on nationalization in 1945 of most of the major industries, including mines, power and public utilities and the iron, steel and metal, armaments, explosives, chemical, paper, sawing, cellulose, food, banking and insurance industries. Glassworks and brickworks were nationalized if they employed more than 150 persons. Compensation was payable but not to Germans or unpatriotic persons, such as the "unreliable persons" mentioned in an earlier law of the same year. These included Germans and Magyars and, besides being ineligible for compensation for nationalized industries, they were forbidden by a law of 1946 to be in any position of importance in any of the industries which were taken over by the state. In Oct. 1946 a law was made by which increment

duty was payable on increases in value between Jan. 1, 1939, and Nov. 15, 1945. A declaration was required within 60 days and duty charged on a sliding scale up to 100% on amounts of more than \$9,300. At the same time a capital levy on all values at Nov. 15, 1945, was made. The rate depended on the taxpayer's age, and a personal allowance of a tax-free element was deducted in respect of each member of the taxpayer's family before assessment; there was again a sliding scale with a maximum rate of 30% on taxable amounts of \$400,000 and over. The previous capital levy law of 1942 was cancelled, but capital levy tax was chargeable in addition to increment duty, and no payment under either head diminished liability in respect of the other tax. Strict penalties were used to enforce these laws.

Yugoslav postwar legislation was not dissimilar and also began in 1945. There were laws for the return of property abandoned through war causes to its original rightful owner, for state property management of such property on a trusteeship basis and for the cancellation of the duty to return if nonreturn was deemed in the interests of the state; in the latter case the trusteeship became protection of actual state property for the benefit not of the owner who had formerly abandoned it, but solely of the state. There was also an agrarian law, by which no person could retain more than a maximum amount (which was ascertainable but not the same in all cases and varied between 50 and 90 ac.) if the land was being exploited by leasing it or by use on it of hired labour. Land was allocated to poor farmers, a fund was established for orphans and collective children's farms were set up. Neither indemnity nor compensation was payable under this law. Valorization of securities was decreed in the same year. In 1946 shares were subjected to further restrictions: all had to be registered in Yugoslavia or with a Yugoslav consulate abroad. No bearer shares might be issued, and no transfers were legal without government permission. There were also decrees confiscating war profits made by war profiteering with severe penalties for failing to give up such profits. In July 1946 a number of industries were scheduled for nationalization, including the coal, gasoline, mining, electricity, metal, chemical, textile, leather, shoes, glass, paper, cement, sugar, oil and agricultural seed industries; later in 1946 a decree enacted state control of most important types of property for three years (including all the nationalized industries) and laid down that neither nationalized property nor any other temporarily taken over by the state should be returned to its original owners if such return were detrimental to the interests of the state. As nearly all foreign property was necessarily under state control, the latter decree provided a means of expropriating foreign interests where required.

In Poland no legislation of importance began before 1946, during which year a sweeping and complete code of nationalization was decreed and enforced. All industries capable of employing more than 50 individuals in one shift were scheduled for nationalization except builders and building contractors and industries already owned by municipalities or co-operative unions. It was not necessary that all such industrial concerns be nationalized, but all were scheduled by the appropriate local authority. In due course the case of each industrial undertaking came before a commission, which decided whether that particular undertaking should belong to the state, a municipality, a co-operative union or an individual or group of individuals. There was a right of appeal to a higher control commission, and the right of individuals to begin or con-

tinue a private enterprise was expressly recognized if the appropriate local authority had approved of such an individual enterprise beginning or continuing. Full regulations for procedure were laid down, and all decisions under the law had to be taken by the end of 1946. Laws provided for the procedure of taking over by the state and for state supervision of all scheduled undertakings pending a decision as to whether each was to become a state enterprise or not. Compensation was payable for undertakings taken over, and its amount was assessed by a special commission appointed for that sole purpose; compensation was not, however, payable to Germans or to persons classed as Germans. For this purpose persecuted persons were classed as Polish, whatever their actual nationality had been, and those who were Polish but had escaped or tried to escape to German-controlled areas of Poland were classed as Germans. As a general guide, certain industries were declared suitable only for public ownership unless very special circumstances existed; these included the mining, gasoline, electricity, gas, water, iron and metal, coke, armament, aviation, explosives, printing and transport industries, tele-communication and larger textile undertakings. Sugar concerns, distilleries, large breweries, large cornmills, oil mills, cold storage plant and yeast undertakings were declared normally suitable for local ownership by municipalities or co-operative unions.

The great destruction of buildings in Poland produced a demolition and repair law of 1946 by which any material removed by the state in the process of demolition and repair became state property and was taken over without compensation. The state might repair any buildings on which repairs had not been started and then retain ownership of them for up to ten years; during this time the person who would otherwise have been the owner was entitled to possession but had to pay to the state a rent based on the cost of repairs plus interest, but subject to a maximum. At the end of ten years the tenant regained ownership and ceased to pay rent, even if he had not by then repaid the state in full. There was also a sequestration law in 1946 by which all property abandoned and not in the true owner's possession was taken over to be managed by the state as trustee; the rightful owner was entitled to reclaim his property so long as he did so within periods varying from 5 to 20 years (for different types of property), after which time the state retained any unclaimed property. Any property of German or Gdansk individuals became state property under this law, and any purchaser of property which had been held by German or Gdansk persons was unable to claim to retain such property even if he did not know that it had once been German-owned.

The similarity between the Czechoslovak, Yugoslav and Polish nationalization laws was remarkable. They were all influenced to a great extent by Russian legal developments and were based more on the theory that law was a system of regulation by the state of state property in the state's interest, than by the view of law as a state-paid but aloof service or system holding the balance fairly between opposing interests which were generally private citizens but one of which was sometimes a state department.

In Greece, two important legal developments were also connected with foreigners. A law providing for state control of concessions involving public utility works and services took control from foreign interests; and a later law, in 1946, provided severe penalties for unlawful possession of, or dealing in, articles belonging to the Allied forces.

The latter was aimed at the prevention of brigandage which too wide a distribution of arms had facilitated.

Norway, after the return of its government to the home country, restored a system differing little from that of 1936 except that coastal shipping was nationalized (and so brought into line with other transport services), strenuous punishments for collaborators were enacted and merchant seamen were put on a par with naval personnel for service pensions and pensions for dependents of those killed in action. A remarkable feature was the nationwide response to an appeal for voluntary funds for such pensions to supplement the already large state allocation. Conditions of service for all mercantile mariners for the future were also greatly improved by the introduction of an employment code for them. Temporary legislation made in England was largely cancelled, as was most of the German-imposed legislation made during the German occupation of Norway; some German laws, however, which had been found of use were retained in force.

In the Netherlands, after the return of the government, it was found necessary to restrict by law the maximum spending of all individuals to the amount of their earnings; this law was, however, administered with due regard to individual circumstances, and sufficient exceptions were in practice allowed to prevent any hardship:

The legislative developments of this group, were, therefore, primarily directed at the re-establishment of national economy and a reconstruction of the material wealth. The central and the more eastern nations paid more attention to economic reconstruction; France, however, directed its first efforts to constitutional reconstruction before proceeding to a thorough attempt at planned economic rehabilitation.

Germany and Italy.—Germany and Italy up to and during World War II were subjected to great alterations of the effects of their laws with comparatively few innovations in the form of laws existing previously.

In Germany, particularly, although new courts were set up, forms were usually retained, but the persons administering the law were subjected in various ways to political pressure, and the law was perverted for the political purposes of the National Socialist state. The secret police were given powers of arrest (based on protective custody), as a result of which their prisoners were put outside the jurisdiction of the criminal law, and unofficial party courts were usually able to keep differences between members out of the national courts and to settle them privately. Trade organizations were able, under clauses in employment contracts, to insist on the reference of nearly all matters affecting their members to arbitration.

In these ways, many cases were kept out of the courts and decided, in effect, by persons acceptable to the ruling party in accordance with state policy. But other means were often widely adopted to influence decisions of courts so that these coincided with what was required by the highest members of the party ruling the country; such were the inculcation of political doctrine at all stages of legal education, the putting of the control of legal education into the hands of trusted party men, the introduction of extraneous qualifications unconnected with law into the course required to be passed before practising as a lawyer (such as attendance at, and passing, a physical training course), and finally the award of all worth-while appointments and promotions to persons acceptable to the party rather than to those most suitable from a legal or judicial point of view; the latter form of influence was particularly effective, since the career of a judge relied much more on state approbation in the German system, in which a lawyer started as a judge at an early age and depended for success on promotion, than in the British system, in which higher judicial appointments were often made from successful barristers rather than from judges of inferior courts.

Litigation between private persons was discouraged as far as possible or kept out of the courts, unless it was litigation by the poorer persons which was state-aided and so naturally distributed to politically acceptable lawyers in preference to others. It thus became increasingly difficult for a lawyer to earn a livelihood unless he was prepared to fall in with party requirements. In spite of this, there were some who persisted in refusing to allow party considerations to interfere with justice, and these formed a valuable postwar nucleus for reconstruction. The law itself (except for the addition of special courts connected with the party which were abolished) was not so much perverted as were the personnel, and a removal of politicallyminded lawyers after the war (included in the removal of National Socialist supporters of all professions) left the law in a satisfactory state to carry on. The division of Germany in 1945 into four zones of occupation under different powers considerably delayed postwar return to legal normality by withholding national sovereignty. A feature of postwar Germany was the exceedingly high number of divorces which reflected the general unhappiness in that country in 1945 and 1946.

Italy was in a position similar to that of Germany, but gained by its earlier defeat and consequently earlier recovery of national sovereignty and beginning of national reconstruction.

Great Britain.-Much legislation was enacted by parliament, but there was also a large volume of detailed legislation effected by the method of publishing rules and regulations under various acts, which were authorized by parliament exactly as if they had been in the acts under which they were published, at the time of the enactment. This method of legislation had been used occasionally before 1936 but not frequently; in 1939 and later years, however, it became a regular practice, first under the pressing needs of the war, and later under the equally pressing need of the Socialist majority in the British parliament to convert the constitutional and economic framework of the country to fit its political theories. Such legislation, unobjectionable in war, was contrary to the spirit of the prewar parliamentary procedure in peace and took much authority out of the hands of parliament to put it into the hands of ministers or even comparatively junior civil servants.

At first such legislation, interpreted by the courts of justice, was never unfairly hard on the individual, but as time went on the framers of these regulations began to alter them whenever a decision of the courts went against them and so to observe the fullest subservience of the written laws to the ends either of the political parliamentary majority or of the various ministries. This apparent encroachment on the liberty of the individual in peacetime was thought by many to be necessary in the interests of increasing state control and of a planned Socialist economy, but it was resented by others and distrusted as tedious and fundamentally contrary to the spirit of British justice. Another apparent encroachment on the individual's right of recourse to the law courts in the last instance was the formation of nonjudicial tribunals (such as the rents tribunals for furnished houses), which had jurisdiction in their own spheres exclusive of the courts of law and without any rights of appeal against their decisions. Such tribunals, presided over, by persons who probably would not have become judges, were not welcomed by the legal profession; as temporary expedients they were justified, but they were

not generally considered satisfactory developments of the previously existing system.

Law based on regulations had become so extensive during the war and printing facilities so restricted, that British citizens might find themselves charged with an offense and unable to obtain sight of a print of the regulation under which they were charged; this state of affairs, however, came to an end soon after the war.

Legislation by regulation and establishment of nonjudicial tribunals made the legislature and the executive dominant partners in the trio of legislature, executive and judiciary which in 1936 had been considered to be each of equal importance in their own spheres and, to some extent, mutual checks. The period 1939 to 1946 brought the judiciary into an inferior position in the trio, with much less influence than it had held before. This change of position suited the ruling elements, but was an innovation as far as the working of the constitution in peacetime was concerned.

The establishment of more ministries and more state boards and authorities, necessary both for the nationalization policy which was being carried out by degrees after the war and for the purpose of increasing the standard of living of the poorest at the expense of the richer, brought into prominence the question of crown litigation. The earlier doctrine was that ministers, ministries and state boards could not generally be sued by the individual in the courts unless an act provided that a particular minister, ministry or board could be sued. With the increase of such bodies an individual was apt to find his rights confusingly different if, for example, he was knocked down by a vehicle driven by another private citizen, from those rights if he was knocked down by a vehicle owned by a ministry which could not be sued. This problem had reached a climax by the end of 1946, and legislation had been foreshadowed but not passed to deal with the problem. Such legislation was also required if two such bodies wanted their disputes referred to the courts, for them to take on the duty of deciding between two public bodies (as was so common in the U.S.S.R. even before 1937) in addition to their more usual role of deciding between two private citizens. Politics became more and more connected with law, and the view was widely held that judges not in sympathy with Socialist views might be unsuitable to administer Socialist laws; this view (which would have been truistic in the U.S.S.R.) was regarded as a dangerous innovation by the more conservative elements in Great Britain and was not acceptable to many lawyers of no particular party affiliation. A school of lawyers arose who wished the judiciary to become a servant of the state acting primarily in the interests of the state and helping the state to administer its own various departments (much as in the U.S.S.R.) rather than that the judiciary should be paid only by the state and primarily used to supply impartial arbitration with binding effect to two parties who could not agree and who would normally be private persons, but one of whom might occasionally be a state department. The latter view of the law became predominant. Appointments to high judicial position were, however, made after the war solely on merit, a factor which prevented the intrusion of politics too deeply into law, and also an innovation, since before the war the highest judicial offices had normally gone to a lawyer in favour with the party in power.

Three other important features were reforms long overdue. First, more concerted attempts than before were made to overhaul the law as it stood; company law and

divorce law, for example, were considered by highly competent and impartial committees with a view to revision, and recommendations of these committees began to be made effective in 1946. Second, the extension of legal assistance of all types to poorer persons was undertaken and the problem of cheaper litigation for those who could not otherwise afford recourse to the law began to be solved. Third, successful efforts were made by administrative steps, by rules of court and by legislation to cut down the time taken to bring to trial nearly all types of cases.

U.S.S.R.—In contrast with the United Kingdom the U.S.S.R. was faced with very different problems of legislation, and different answers to the problems were found. One of the most important reasons for different solutions was the fact that a law of general importance and applicability in the U.S.S.R. had to be designed to cover the inhabitants of an area, with communications not fully developed, of 8,000,000 sq.mi., including peoples of many different races, customs and climates, while in the United Kingdom there were entirely separate legal systems (with mutually exclusive jurisdictions and often completely contrasting laws) for each of six countries—England and Wales, Scotland, Northern Ireland, the Isle of Man, Jersey and Guernsey.

It was to be expected, therefore, that a greater degree of detailed allowance for local customs and difficulties would be given in United Kingdom legislation in cases where similar allowances could not possibly be made in the U.S.S.R., in which wider discretion had to be permitted to judges and officials in the interpretation of laws. A second important reason was that the U.S.S.R., although a European power, was also an Asiatic power; the centre of government and so of legislation was, it is true, in Europe, but after the internal stabilization in the interval between 1917 and 1937, the Asiatic elements of the population had been able to make themselves more and more considered in any question affecting the whole union. Asiatic Russians were able to begin exercising some influence of their needs on solutions to legislative problems. The union included populations stretching as far east (from the point of view of a European) as those of China, and was therefore much more affected by the oriental outlook on law than was any other country in Europe; Turkey, the only other country which stretched into Asia, was avowedly westernizing itself (which the U.S.S.R. was not) during this period; the U.S.S.R. was therefore to be considered as far more oriental in outlook than the remainder of Europe.

Unification of the republics and internal organization and co-ordination reached a higher level in 1940, owing to the war, than ever before; these two considerations, vast area and oriental outlook, accordingly exercised more influence on soviet legislation than ever before and were the key to a proper appreciation of legal developments in the U.S.S.R. The eastern Russian population, too, was the least disturbed after 1940 by the war and so benefited from developments proportionately more than the western and became more nearly equal in importance to the western populations, which had before been the dominating, more advanced, more prosperous and consequently more influential elements.

The period 1937 to 1946 in the U.S.S.R. began with a continuation of the settling down of administered justice to something like that in European countries. The need for using the courts (like every other available means) to enforce the new political system had gone, and the advisability of continuity in legal decisions and of the citi-

zen being reasonably able to foretell the decision of a court began to be felt. The principle under which a soviet judge previously had been able to extend any enacted law to circumstances which the words of a law did not cover but which the spirit of that law appeared to a judge to cover, began to fall into disrepute and disuse. Although extensions of this sort continued, they were applied only in cases where the legislators had obviously omitted some particular phrase and so failed, in so many words, to cover an offense; these extensions were much less frequent than before, in order to allow the citizen to be able to know in advance and with greater certainty how he stood as regards the law.

This type of security was deemed good for the worker and so desirable, not because it helped an individual but rather because it produced a more satisfied (and so a better) worker for the state.

Punishments for the individual criminal became even more based on the corrective view; it was considered wrong to punish as retribution for past evil-doing, and right to correct and restore the individual wrongdoer to useful employment as a citizen. Educational rather than penal treatment of convicts increased greatly, since guilt as such was not recognized; a crime was regarded rather as an upsetting of state routine and the criminal as a child who had to be led into the paths of usefulness. Labour shortage (in the sense that there were always more jobs to do than people to do them) made it essential that all available labour should not only be used but should as far as possible be willing to co-operate; and the punishment of having to stay at his job and pay part of his wages as a fine (i.e., the deprivation of the right to give his work freely to whatever industry he chose, and a diminution for a period of his reward from the state) was more widely used, in preference to imprisonment.

The increasing political and economic stability of the regime allowed a greater use of this less severe punishment, which before might have been inadvisable in the interests of political stability. Re-education of criminals became the dominating idea in soviet criminal justice, except in cases where it was apparent that no amount of re-education could make the delinquent a useful citizen, when he was regarded as an enemy of the state and liable to an appropriate penalty.

From 1930 the position of judges (still elected by the people) became more secure in that they could be removed from office only in extreme cases. In minor cases they were not punished for shortcomings and were left in office.

Labour shortage in increasingly stable conditions brought into the limelight two types of offense which in the rest of Europe were more usually punished in fact by loss of position than in law by legal penalties; these were bad management by factory and similar managers, and bad attendance at work by other workers. It became necessary in 1938 to punish these crimes by exemplary sentences since the automatic punishment of being dismissed by the employer did not occur in the U.S.S.R., where there was one employer only, the state. The war demanded ever greater severity in respect of these types of crime.

Three other aspects of soviet criminal justice were remarkable. First, a large number of criminals did actually surrender themselves in the hopes (which were justified) of exceptional consideration for so doing, re-educational rather than retributive treatment and complete rehabilitation after the end of their sentences with the full opportunity of being useful citizens. Second, it appeared to become more and more the accepted practice to investigate fully the facts and merits of criminal cases before the trial

of the offender, so that by the time the trial was reached the result was nearly always a foregone conclusion; instead of determining the guilt or innocence at the trial, the guilt or innocence had apparently usually been established to the satisfaction of all (including even the criminal himself) before the trial, which then became a formality as regards the pronouncement of the verdict and directed rather to the ascertainment of the correct sentence or treatment of the criminal; this accounted for the surprisingly large number of confessions at trials. Third, the war brought to members of other European nations some experiences of the treatment of military offenses in the soviet army; these were of a severity unparalleled in western Europe, since the efficiency of the fighting forces in the war was of such vital importance that lack of the best military discipline became a menace to the state itself and so a supreme wrong.

The oriental disregard for the life of a human being as such (when the safety of the state might be affected) produced an extreme harshness of military discipline not found, for example, in France, but not differing in kind from that necessary for Tito's forces in Yugoslavia or British forces in the far eastern jungles, though still much severer in degree. Death by shooting for officers drunk on duty or for theft by convoy drivers of vital stores entrusted to their charge, or having to sit on ice without trousers (and so freeze to death) as a punishment for military irregularities further north, were examples of the higher degrees of discipline required and the severity of punishment for its breach. These types of punishment contrasted sharply with those of the British troops, for example, where sentence of death was never given for desertion in World War II, contrary to the practice in earlier

Increasing stability also affected the application of the soviet family laws. Divorce, though still as easily available in theory, was discouraged in practice, and additional formalities and fees made it more difficult to obtain after the end of World War II. Education ceased in 1944 to be required by law to be the same for both sexes, and the special needs of each were recognized. Women were to be trained for motherhood, which became a profession, aided by laws granting distinctions and financial aid to mothers of large families. These laws applied equally to married or unmarried mothers and were partly caused by the need for increase in populations depleted by the ravages of war. Irregular marriages (recognized only in the western parts of the U.S.S.R.) based solely on cohabitation, ceased to be recognized in 1944, since the main purpose of their recognition had been to ensure provision for otherwise portionless illegitimate children whose interest and support had by then become primarily the duty of the state, not of the individual father. Increased taxation on childless adult men and women was another incentive to production of children. Since in the U.S.S.R. the interest of the state preceded all else, the full recognition of unmarried motherhood as honourable was in no way contrary to encouragement of the institution of marriage, for which increasingly full legislative support was forthcoming. This recognition of unmarried motherhood was only a particular aid in overcoming a particular evil (shortage of population) which might well be temporary. Legislation continued to support regular marriages as against marriages according to the less equalitarian principles of some of the Asiatic parts of the union; these parts, in which marriage had generally been polygamous until recent times, were a complication and difficulty in soviet family legislation which was scarcely encountered elsewhere in Europe.

The period 1937 to 1946 in the U.S.S.R. was therefore one of gradual detachment of law from politics, tempered by the necessities of an economic recovery from the destruction and depopulation caused by the war. (See also International Law; Judiciary, British; Supreme Court of the United States.)

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Lawn Tennis

See TENNIS.

Lawrence, Ernest Orlando

Lawrence (1901-), U.S. physicist, was born Aug. 8, 1901, in Canton, S.D. He received his bachelor's degree at the University of South Dakota in 1922, Ph.D. at Yale university in 1925, was awarded honorary degrees as a doctor of science by a number of leading universities in the United States, and was a National Research fellow in physics at Yale from 1925 to 1927. He was appointed assistant professor of physics at the University of California in 1927, becoming a full professor in 1930. An authority on nuclear, biological and medical physics, he was a pioneer in the development of the cyclotron-his first model, weighing 60 tons, was built in the late 1920s. Subsequently he designed a 200-ton mechanism and for this achievement, in addition to his atomic research, he was awarded the Nobel prize for physics in 1939. He became a member of the consulting board of the Institute of Cancer Research at Columbia university in 1935, and was awarded a number of medals for his work in atomic research and related fields. Dr. Lawrence played a prominent role in the development of the atomic bomb. He was also a member of a four-man advisory group which assisted a special U.S. government interim committee on the postwar direction, control and use of atomic energy.

Lead

The wartime gaps in the world production tables for lead had been nearly all filled at the end of the decade 1937–46, except that totals were still lacking for 1944 and 1945.

It is to be noted that while production decreased 13% in 1944 in the countries reported, the trend was reversed in 1945 with an increase of 3%.

Mine production of lead in the United States dropped 60% during the depression years, and had not recovered by the end of the decade. In 1937 output was still a third lower than in the peak year of 1926, and after the recession of 1938 even the pressure for war production failed to bring an output larger than that of 1937, except in one year—1942. After the war peak, mine production continued to decline. Preliminary estimates gave a total of about 330,000 tons in 1946, a decline of 15% below 1945, as compared with drops of 6%, 8% and 9% during preceding years. While the rate of decline was decreasing in 1942—45, it was stepped up to a higher bracket in 1946.

				1011011110110					
	1937	1938	1939	1940	1941	1942	1943	1944	1945
Argentina	10,910	11,240	15,430	14,180	19,865	22,884	26,235	21,050	23,324
Australia	255,954	249,293	297,172	211,849	239,093	231,760	202,305	173,093	176,972 9,337
Belgium	102,857	103,805	108,280	34,866	9,789	17,902	8,774	8,477	7,337
Burma	85.680	88,368	86.666	88,966	82,074	18,883			
Canada	199,697	200,381	190,568	220,090	228,026	243,304	223,869	142,581	162,537
France	40.971	46,499	46.717	28,194	25,596	13,737	15,128	5,040	5,326
Germany	179.000	189,300	204,700	193,200	190,500	164,100	186,500	165,000	• • •
leads.	42,922	47,716	42,790	40,685	40,778	31.715			
Italy	11,240	17,949	15,678	24,973	28,347	28,475	3 <i>5,</i> 308	38,503	
Mexico	236,614	301,514	235,536	211.622	166,633	212,734	234,188	196,509	226,322
	21,002	31,392	26,797	34,316	36,234	41,794	47.588	42,975	44,094
Peru		35,063	28,650	50,696	51,660	45,359	40,521	34,147	29,909
Spain	35,244	26.224	25,276	29,344	17,283	40,007	,		
Tunisia	27,291		82,450	82,700		110.000	138,600		
U.S.S.R	60,600	75,500			544,683	548,852	469,480	464,668	443,467
United States .	466,535	364,826	445,619	516,628	344,063	340,632	407,400		
Total	1,853,000	1,874,000	1,945,000	1,890,000	1,860,000	1,810,000	1,690,000		• • •

Table IIData of the	Lead Industry in the	United States, 1937-45

(Short tans)													
			1937	1938	1939	1940	1941	1942	1943	1944	1945		
Mine output .			464,892	369,726	413,979	457,392	461,426	496,239	453,313	416,861	390,831		
Refinery output Domestic ores Foreign ores		•	467,317 443,142	383,669 331,964	484,035 420,967 63,068	533,179 433,065 110,114	570,967 470,517 100,450	566,839 467,367 99,472	469,612 406,544 63,068	464,763 394,443 70,320	443,585 356,535 87,050		
Imports			10.000	63,901	86,883	282,492	381,214	492,471	319,116	319,701	300,326		
Exports			20,091	45,866	74,392	49,079	14,359	5,814	13,261	15,523	1,784		
Secondary recovery . Consumption Stocks, year-			275,100 678,700	224,900 546,000	241,500 667,000 148,079	260,346 782,000 221,882 143,412	397,416 1,050,000 201,113 100,149	323,001 1,043,000 447,195 117,174	342,094 1,113,000 418,567 129,540	331,416 1,119,000 302,596 125,134	363,039 1,052,000 333,726 161,812		
Producers Consumers Government		:	208,803	209,956	148,079	78,470	110,964	81,660 248,361	115,152 173,875	86,908 90,454	103,214 68,700		

Part of this decline in U.S. mine output was offset by the importation and smelting of foreign ores; ore imports declined after 1940, and supplies were maintained by increased metal imports and some improvement in secondary recovery. Consumption reached a peak in 1944, at a point 65% higher than in 1937, and in 1945 dropped back moderately. In 1944 and 1945 U.S. mine production supplied only 37% of the current consumption, against 48% in 1942 and 68% in 1937.

Ore reserves were too limited to meet the war demand, and in addition the price was inadequate to meet increasing costs—a difficulty that was only partly offset by the Premium Price plan, a procedure designed to meet costs for producers whose operating costs were above the ceiling price. The proportion of the total output produced at ceiling price dropped from 82.6% in 1942 to 66.6% in 1943, 49.7% in 1944 and 37.9% in 1945. All told, the domestic production under the Premium Price plan, from Feb. 1, 1942, to Dec. 31, 1945, amounted to 675.069 tons out of a total of 1,691,903 or 40%, as compared with 21% for copper.

After the scrapping of price controls in Nov. 1946, the New York quotation on lead was advanced from the controlled price of 8.5 cents per pound to 10.5 cents, and then to 11.8 cents. This new price gave some promise of helping to overcome the postwar shortage of lead, which was almost as bad as the war shortage.

In Canada lead production reached its peak in 1942 with an increase of 22% over 1937. Production declined in 1943 and 1944 but recovered some ground in 1945. Even including the increase in 1945, production was below the 1936 level. The improvement of 1945 extended into 1946, with mine production for the first three-quarters at 139,-236 short tons, 13% more than the same period of 1945.

Production of lead in Mexico during the decade was so erratic that it could not be said to have shown any definite trend. In 1938 Mexico made an advance over 1937 that was greater than in any other country, only to be followed by declines that cut output almost in half by 1941; 1942 and 1943 brought increases, 1944 declined and 1945 came back to a point 4% under 1937, but 36% more

than the low of 1941. In 1946 there was another break, with refinery output for the first three quarters 124.595 short tons, against 224,925 tons in 1945.

In Australia there was no great improvement in lead output in response to war demand. The high point of the decade was in 1939, followed by a heavy drop in 1940 and a mild recovery in 1941; then followed successive declines in 1942, 1943 and 1944, broken by a 2% increase in 1945. In the first three-quarters of 1946, refinery output was 113,-477 short tons, 13% under the average rate for 1945. (See also METALLURGY: MINERAL AND METAL PRO-DUCTION AND PRICES.)

(G. A. Ro.)

League of Nations

The years 1937-46 witnessed the collapse and final dissolution of the League of Nations. The first symptoms of its decay had become discernible when, in 1931, through the irresolution of its chief members combined with the aloofness of the U.S.A. (not a member), it failed effectively to protect China against Japan's aggression in Manchuria. The ineffectiveness of the League's system of collective security became even more visible in 1935 and 1936. When in 1935, Italy invaded and conquered Ethiopia, the chief powers showed themselves reluctant to enforce the principles of the League's covenant against an aggressor who happened to be a major power. The same experience repeated itself in 1936, when Germany remilitarized the Rhineland, in open violation of the treaty of Versailles.

The lesson thus provided was not lost on many of the smaller powers, and an increasing number of states, particularly in Latin America, withdrew from membership; others were compelled to withdraw under pressure by their axis neighbours; a third group of countries ceased to be members as the axis powers or the U.S.S.R., by invasion, occupation or annexation, deprived them of political independence. After January 1, 1937, the League gained only one new member, Egypt, which joined on May 26, 1937. Withdrawals during 1937-41 were as follows:

Country	Date of Withdrawal Notification
El Salvador	Aug. 11, 1937
Italy	Oct. 11, 1937
Austria	March 21, 1938
Chile	May 15, 1938
Venezuela	
Hungary	April 11 1090
Peru	
Albania	April 10 1090
Spain	May 7 1090
Rumania	Tuly 11 1040
Denmark	July 27, 1940
France	

Under the covenant (article 1, paragraph 3), notice of withdrawal from the League took effect two years after the date of notification, and the above withdrawals therefore became effective only in the years 1939-43. Paraguay in 1937, and Guatemala and Honduras in 1938, left the League in consequence of withdrawal notices given in 1935 and 1936 respectively. In a class of its own was the case of the U.S.S.R., which in consequence of its attack on Finland was expelled from the League on Dec. 16, 1939.

The total official membership of the League fell from 57 on Jan. 1, 1937, to 54 on Jan. 1, 1939, and to 40 at the time of its dissolution in April 1946. The official membership figures were not, however, an indication of effective membership, by reason of the two-year period of notice which applied to withdrawals, and also the fact that a number of states, still counted as members, had in fact lost their independence (Estonia, Latvia and Lithuania in 1940).

The League had never been fully universal. Thus, the U.S.A. had never become a member; Germany had not joined until 1926, and left in 1933; the U.S.S.R. only joined in 1934. During the critical years 1938–39, the following great powers were outside the League: the U.S.A., Germany (left 1933), Italy (left 1937), Japan (left 1933). At the end of 1939, with the expulsion of the U.S.S.R., another great power departed.

Impotence.—With confidence in the League badly shaken as a result of the Manchurian and Ethiopian affairs and, even more so, Germany's coup in the Rhineland (March 1936), a movement developed to "reform" the covenant which led to a debate at the meeting of the League's council in Jan.-Feb. 1938. The proposed reform of the covenant aimed in reality at the weakening of its key article (article 16) which provided for automatic and obligatory economic sanctions against a covenant-breaking state and for optional military sanctions. Failure effectively to enforce economic sanctions against Italy in 1935-36 had shown that the smaller countries, in trying to apply such measures against a powerful aggressor, exposed themselves to considerable risk without securing in return an adequate measure of collective security. It had become clear, by then, that collective security was worth no more than

"Gloom in Geneva." An allusion to Anthony Eden's championship of the League of Nations before his resignation as British foreign minister February 20, 1938; cartoon by Thomas in the Detroit News. The league ended its 26 years of existence in April 1946



the support given it by the major League powers and that such support was not forthcoming against another great power. Hence, in Jan.-Feb. 1938, an attempt by Sweden, the Netherlands and Switzerland, with which Poland showed a measure of sympathy, to remove the automatic character of economic sanctions. This move reflected the weakening in the League's influence and stature. This very argument was indeed openly invoked when in May 1938, Switzerland, through its foreign minister, Giuseppe Motta, requested express recognition of Swiss neutrality and claimed to be exempted in the future from participation in sanctions under article 16. Significantly, this demand was granted by the League's council on May 15, 1938, although it was fundamentally in contradiction to the very principle of collective security on which the League was based.

When civil war broke out in Spain (July 1936), and when Japan, in July 1937, began its attack on China which was to lead to an eight-year war, the Spanish republican government and the Chinese government appealed to the League for assistance, without securing any practical results. By then, all the major powers had proved their unwillingness to fight wars for interests wider than their own. In later international conflicts, the League was completely by-passed. This was the case when Germany invaded and annexed Austria (March 1938); occupied the Germanspeaking districts of Czechoslovakia under the Munich agreement (Oct. 1938); and occupied and turned into a protectorate the remaining territory of Czechoslovakia (March 1939). Similarly, when Italy invaded Albania (April 1939) and Germany began World War II by its attack on Poland (Sept. 1939), no one thought of the League. When the U.S.S.R. attacked Finland (Nov. 30, 1939), Finland's appeal to the League (Dec. 2, 1939) proved to be the last instance of its kind. The council expelled the U.S.S.R. on the ground that by its aggression against Finland it had "placed itself outside the League of Nations." The practical effect of this expulsion was nil.

During World War II, the League ceased to play any political role whatever. Its secretary-general, Joseph Avenol (French) resigned his post on July 26, 1940. In the technical field, the League from July 1940 to April 1946 continued its valuable work at Princeton, New Jersey, U.S.A., where its departments of finance and economics, health and opium control had moved on the invitation of Princeton university. Sean Lester (Eire), deputy directorgeneral, acted as secretary-general during that period.

The 21st and last assembly of the League met in Geneva from April 8 to 18, 1946. Of the 40 member states then left, 31 were represented to receive the report of the acting secretary-general on the League's work during the preceding six years, formally to dissolve the League and to transfer its assets, among which the Geneva building of the League was one of the most valuable, to the United Nations (q.v.) its successor.

Balance Sheet.—Many critics, not all of them politically disinterested, put the blame for the collapse of collective security on some alleged constitutional defects of the League. In retrospect, such criticism appeared in the main unfounded. Despite the absence from Geneva of the U.S.A. the League achieved a number of solid political results during the first phase of its existence. During the years 1920–31, it contributed materially to the stabilization of the new Europe created by the treaties of Versailles, St. Germain-en-Laye, Neuilly-sur-Seine (1919) and Trianon (1920) and secured the peaceful settlement of nu-

merous conflicts which might easily have degenerated into war. This was in particular the case of the Corfu incident of 1923 between Italy and Greece and, even more so, of the Graeco-Bulgarian frontier incident of 1925. There were other cases of successful League intervention during its first phase such as the settlement of the dispute between Sweden and Finland over the Åland Islands (1920–21), the halting of a Yugoslav attack on Albania (1921), the settlement of the status of Memel (1923–24), although it had to record failure in the dispute between Poland and Lithuania over Wilno (Vilnius) in 1920–23.

In general, it may be said that the League succeeded as long as the major powers among its members stood firmly behind the covenant. As it was not a world state with a sovereignty transcending that of its individual members, effective League action required a wide measure of agreement among its principal members. Such agreement was all the more necessary as military sanctions, under article 16, paragraph 2, could only be "recommended" by the council, and the League did not possess military forces of its own that could have been used for the enforcement of collective security. France, for many years, advocated the creation of an international force to be put at the disposal of the League, but without success.

It was inaccurate, therefore, to blame the League as such for failure. In fairness, this indictment lay not against the League, as the embodiment of collective security, but against its member-states which failed to abide by the covenant to which they had solemnly bound themselves.

Nor was the record of the United Nations, as the League's successor, such in 1945-46 as to excuse so unfair an appraisal of the League's achievements. Indeed, the San Francisco charter, from which the United Nations took its authority, restated in all its essentials the principles of the covenant. And, as in 1946, the new organ of collective security had not yet been put to any major test, it was then still doubtful to what extent its action would prove more effective than that of its predecessor. The main advance of the San Francisco charter on the League covenant lay no doubt in placing an international force at the disposal of the United Nations. But, on the other hand, not only the military, but also the economic sanctions became optional under the charter. As under the Geneva covenant the application of both depended in fact on the unanimity of the great powers. In the absence of such unanimity, the veto of one of them would in fact leave international affairs substantially in the same state of anarchy as before. (See also Mandates; Narcotics and NARCOTIC TRAFFIC; PERMANENT COURT OF INTERNATIONAL JUSTICE; UNITED NATIONS.)

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Leahy, William Daniel

Leahy (1875—), U.S. naval officer, was born at Hampton, Ia., on May 6, 1875, and was graduated from the U.S. naval academy at Annapolis in 1897. He was named chief of the naval bureau of ordnance in 1925, chief of the bureau of navigation in 1933, and chief of naval operations in 1937. He was promoted to the rank of full admiral in 1936. Upon his retirement from the navy in 1939, he was appointed governor of Puerto Rico. He then served as ambassador to the French government at Vichy from Nov.

1940 to April 1942, when he was recalled in protest against Vichy's policy of collaboration with Germany. In July 1942, President Roosevelt named him his chief of staff. Leahy was promoted to the five-star rank of admiral of the fleet in Dec. 1944. He had accompanied President Roosevelt to the international conferences held at Quebec, Cairo and Tehran in 1943, and in 1945 participated in the Potsdam parley at Berlin. He remained as chief of staff to President Truman, and was named to the National Defense council in March 1946.

Lear, Ben

), U.S. army officer, was born May 12, Lear (1879-1879 in Hamilton, Ont., and was taken to the United States by his parents while still an infant. After being graduated from high school in Pueblo, Colo., he became a printer's devil. Joining the U.S. army during the Spanish-American War (1898) he served in the Philippines and was commissioned a second lieutenant in 1899. After four and a half years in the Philippines, he returned to the U.S. and was stationed in Cuba in 1906. He served in World War I and in World War II was made commander of the 2nd U.S. army in 1940. It was while in this post that Lear severely disciplined some troops in a motorized regiment returning from manoeuvres in 1941 who shouted "yoo-hoo" to girls as they drove past a Memphis golf course. Terming the conduct of the soldiers a "disgrace to the army" Lear forced the troops to walk 15 mi. as punishment. The incident caused some criticism in congress, although the affair subsided shortly.

In 1943 Lear was made temporary commander of the army ground forces and in 1945 he was made deputy commander to Gen. Eisenhower. The war department announced Lear's retirement from the army in Oct. 1945.

Leather

The leather industry was one of the first major world industries to be affected by impending war, and later by war itself and the demands of military procurement. Few other industries were called upon to make a greater effort to produce for military use and at the same time meet a substantially increased civilian demand. This the leather industry accomplished under many war-created difficulties. In the postwar period, however, the industry found itself in another unique position. Having served its civilian market exceedingly well during the war years, having contributed greatly to the military needs of war, and having earned much respect and good will, it entered the postwar period with both its productive ability and its major markets threatened by seriously undermining conditions.

Statistics on world conditions in the leather industry were not yet obtainable for the years 1941 through 1946, and much of the information available on world conditions after the start of World War II was incomplete, unreliable or purely speculative.

The relation of the U.S. leather industry to the world industry and three other leading leather producing countries is shown in Table I. No later production statistics were available in 1946 for the foreign or world industries, but it was believed that in spite of the urgency of war needs in the belligerent countries, leather production throughout the rest of the world declined somewhat, and in some areas declined greatly, between 1939 and 1946, while the U.S. leather production rose in that period.

Table II shows how a high rate of production was maintained by U.S. tanners through the war years, in contrast with assumed declines elsewhere.

Leather production was based as usual not only upon

							10	00)'s	omitted)			
										1937	1938	1939	1940
								١	WC	ORLD			
Cattle hides Calf and kipskins Goat and kidskins . Sheep and lambskins	:									104,874 74,166 83,557 90,913	101,515 72,995 78,863 88,067	103,142 74,545 80,276 90,887	100,656 71,323 75,110 84,885
							UN	111	ΈD	STATES			
Cattle hides Calf and kipskins Goat and kidskins . Sheep and lambskins	:	:	:	:	:	:	:			22,875 12,440 46,600 34,235	19,410 12,500 32,783 28,950	22,100 14,050 40,890 39,400	21,900 11,460 38,460 36,800
								G	ER/	YANY			
Cattle hides Calf and kipskins Goat and kidskins . Sheep and lambskins	:	•	:	:	:	•	•			9,817 13,006 8,313 10,411	9,750 12,187 6,450 9,865	9,814 11,116 7,987 8,955	9,175 9,887 5,445 7,626
						U	VIT	ΈC)	INGDOM			
Cattle hides Calf and kipskins Goat and kidskins . Sheep and lambskins	:	:	:	:	:	:	:	:		11,413 7,617 13,005 8,012	10,960 7,800 13,195 8,610	10,787 8,144 12,610 8,855	11,005 7,775 10,670 7,896
								F	RA	NCE.			
Cattle hides Calf and kipskins Goat and kidskins . Sheep and lambskins	:	:	:	:	:	:	:	:		7,248 7,512 7,341	7,500 7,895 8,210	7,880 8,055 9,177	6,005 7,342 6,117
anech and iduntating	٠	٠	٠	•	٠	•	٠	٠		11,417	11,612	12,545	9,446

demand, but also upon the supply of raw stock available. That raw stock supply remained dependent upon meat production and amount of livestock available for slaughter. How much the leather industry was affected by the fluctuating supply of raw stock was spectacularly proved in the summer of 1946, when a drastic curtailment in the numbers of livestock sent to slaughter resulted overnight in an equally drastic cut in raw stock supply and leather production, forcing many tanneries and shoe factories to suspend or curtail operations.

Table II.—U.S. Leather Production, 1941-45 (000's omitted)

				1941	1942	1943	1944	1945
Cattle hides								
Calf and kipskins . Goat and kidskins								
Sheep and lambskin								

On this point, the outlook for domestic raw stock supply at the end of 1946 was fair, but the world outlook was not bright. However, estimates of world supply of hides and skins in the years immediately following 1946 varied so greatly that they could not be regarded as anything but the prophecies of well-informed men.

An estimated reduction of cattle in Europe from prewar figures is shown in Table III, which indicates that herds had to be greatly increased before slaughter could reach a level that would satisfy the normal demand for hides and skins.

Table III.—Reduction of Cattle in Europe from Prewar Figures (Trade estimates)

Austria								Greece 509	
Belgium		٠					15%	Hungary 679	%
Denmark				Sli	gh	t ir	ncrease	The Netherlands 309	
France					٠.		3 <i>5%</i>	Poland 679	
East Germany .						Ur	nknown	Rumania 139	
North Germany							10%	Russia 509	
West Germany	٠	•	•		•	•	40%	Yugoslavia 509	6

Analyzing the raw stock situation at the end of 1946, experts predicted a rise in U.S. supplies, and also reported that indications at that time pointed to a world situation not as bad as feared earlier in the postwar period.

L. J. Norton, acting head of the department of agricultural economics of the University of Illinois, reported to the leather industry that domestic cattle population had increased slightly in 1946, and that slaughter was certain to be heavy in 1947 and the years immediately following, unless drought or some other factor drastically reduced herds. Even though the cycle moved downward,

he said, it would still leave the country with total cattle numbers in excess of 70,000,000.

An encouraging report on world conditions was presented by Julius G. Schnitzer, chief of the textile and leather division of the department of commerce, who said that late 1946 reports indicated a world-wide increase in the demand for meat, so the world hide and skin supplies might be higher than in prewar years. According to Schnitzer, the decline in the world livestock position was not as great as had been estimated during World War II. For example, he estimated the world cattle population at 710,000,000 head, or only 2% less than the prewar total, with the heaviest losses in soviet Russia and other European countries.

Against optimistic statistical reports and forecasts, political and economic trends in some of the major hide and skin producing countries during the war had to be weighed. In some of the most important producing countries there was a definite and determined effort to discourage exports of raw stocks, and encourage their manufacture domestically into finished leather and leather goods for domestic use and for export.

Most of the important hide and skin producing areas remained predominantly agricultural. Political leaders of those countries yielded to pressure from economic experts to increase industrial activity and decrease importations of finished products which, if made domestically, would provide employment for large numbers of the population. Such an attitude was sound economically and politically, and could not be regarded lightly by countries like the United States, which had long considered many of the foreign countries involved only as good sources of raw stock supply and good markets for exports of finished leather and leather goods.

From a production standpoint, therefore, the U.S. leather industry entered the postwar period under conditions which indicated that the supply of domestic raw stock would not be large enough to meet the industry's complete needs, and a problematical supply of important raw stock imports. At the same time, consumer demand for shoes and other leather goods in the United States was at an all-time high level in the months immediately following the war.

Tanning.—There were also many changes in the tanning material situation through the years 1937 to 1946. Obtaining tanning material supplies from the far corners of the world, as well as domestic sources, was as complex a problem for the leather industry as was the procurement of an adequate supply of good hides and skins.

During the war, tanning material imports into the United States were greatly affected by wartime shipping difficulties. Active hostilities in some important producing areas also reduced such imports. The increased demand for some materials, notably chromium, by vital war industries also reduced the tanners' normal supplies. At the same time, the high rate of production of military and essential civilian leathers created a need for above-normal quantities of tanning materials.

Many new experiments with various new synthetic tanning materials were made during the war, and also a thorough search for domestic sources of vegetable tanning materials to substitute for those normally imported.

After the war's end, much of this emergency research was abandoned, although some of the synthetic tannins developed or improved during the war seemed destined for wide usage. It seemed doubtful that there would be

any considerable change in vegetable tanning materials used, with a few exceptions. Tannin is contained in practically all forms of plant life, but its extraction from most plant varieties remained commercially impractical, while the tannin in some others was mixed with other substances not conducive to good leather making.

Corn sugar supplies, highly important to leather manufacturers, were low during 1946 and prospect of immediate improvement seemed poor at the end of the year, although the long-range outlook was satisfactory.

With the abandonment of most of the wartime production of arms and essential metal materials of war, the chromium supply situation was satisfactory to the leather industry. The worst shortage was that of chestnut extract, the most important sole leather tanning material; supplies were limited during the war by a lack of labour to produce the material. No long-range improvement in the supply of chestnut extract was visible at the end of 1946 because of the still-unconquered blight that had killed chestnut growth across the country. Only blight-killed trees remained as a source of chestnut tanning extract. The leather industry was fortunate in the fact that little loss of tannin content was shown in blight-killed trees. It was unfortunate in the fact that chestnut reforestation to ensure long-range supplies was impossible while the blight remained unconquered. Much research was done in this direction over a period of years by the department of agriculture, and test growths of imported species of chestnut were watched carefully until their hoped-for resistance to the blight could be determined.

During the war, the chemurgic work undertaken to develop domestic tanning materials reached a high point, with some promising results. Much of this work was carried on by the department of agriculture and by the Tanners Research Laboratory of the University of Cincinnati, which made extensive studies in the usage of proposed new vegetable tanning extracts. The most promising sources of U.S. domestic tannin uncovered by these projects were American sumac, canaigre, guayule, and the bark of the western hemlock and Sitka spruce.

It appeared probable at the end of 1946 that commercial development of these sources of tannin would be expanded.

The U.S. tanning industry had not accepted widely the use of synthetic tanning materials, as was common in Europe. The domestic industry had used them only as tanning aids, or assistants, in conjunction with vegetable tanning materials. The synthetic materials were customarily obtained from industrial wastes, such as the phenols or naphthalene wastes. Waste sulphite liquor of the paper pulp industry, containing solubulized lignin, the noncellosic part of wood, was used in increasing quantities. Lignin is also a waste in such materials as straw or corn stalks.

The situation in regard to oils and fats, important to the tanning and finishing of leather, and also in regard to many leather finishing and dyeing materials, became critical early in the war period as sources of foreign supplies were cut off and domestic supplies were lowered by war production demands, labour shortages, and transportation difficulties. Many of these materials remained in critical supply at the end of 1946, but the lifting of price controls to stimulate production, and a generally improving commodity situation, tended to relieve the shortage.

All government controls were lifted on hides and skins, leather, shoes and other leather goods during the latter

half of 1946, with the exception of some import and export controls. The leather and leather-consuming industries, together with the hide and skin industry, had been among the first to be placed under government controls at the start of the war period. The controls were established to conserve raw stocks and regulate production for all military and essential civilian needs. They covered almost every phase of manufacture and use of leather in minute detail, and were frequently revised to meet changing wartime conditions.

The fact that the U.S. leather industry maintained a high production record throughout the war years under extreme difficulties, and that the military and essential civilian needs of the nation were fully met, without inflation, was evidence of the co-operation that existed throughout the control period between the leather industry and the government control agencies. In this respect, the leather industry established a record through World War II that was equalled by few other industries and bettered by none.

Technological Lag; Scientific Advance.—During the eventful years 1937–46, the science of leather making made great forward strides, but technological development failed to keep pace with scientific progress. The industry devoted more attention in this period than previously to the need for technological improvement, but actual progress in this direction was retarded by wartime conditions.

A considerable proportion of the tanning machinery and equipment in common use was still of heavy types and was neither as intricately built nor as rapid in operation as much of the machinery used by other industries. Therefore it had a longer life; this retarded replacement and probably had discouraged somewhat the development of machinery and equipment over a long period of years.

Even the urgency of war production requirements did not stimulate any substantial rebuilding of the tanning industry or striking advances in leather making technology.

In the scientific field, however, leather manufacture was considered more and more as a science as well as an art. Numerous scientific advances by the leather industry during the ten years gained general acceptance by the industry.

Substantial advances were recorded in the making of bookbinding, upholstery, belting and bag leathers resistant to rot from acids absorbed from the air. A new method of disinfecting hides and skins was developed and adopted, as were improved methods of tanning pigskin leathers for shoe uppers, leading to increased use of those leathers for footwear.

There were noteworthy developments in the tanning and use of leathers from domestic pigskins. Further commercialization of those leathers remained dependent upon increased sources of raw stock supply. This required a change in meat industry practices, as packers commonly processed pork cuts such as bacon, hams, shoulders, etc., with the skins left on.

Tanning of marine leathers, using the skins of various large species of fish for raw stock, also advanced. Wide-spread use of such leather, however, seemed likely to remain a subject for pseudoscientific writers to discourse upon and for the fish industry to dream about. Although much publicity was given to the use of fishskins as raw stock by tanners in Germany, Japan and other countries hard hit by the war, postwar studies revealed that those leathers represented only a small fraction of the total, even during the most stringent raw stock shortages. Marine leathers seemed likely to continue only as novelties.

A new process of curing hides and skins with salt-saturated paper and an addition of antiseptic was announced. Stretchable leather, backed with a woven elastic material, became widely used for the production of several types of articles, especially for uppers of women's shoes. A new type of innersole material, made, of fibre and leather scrap but containing no rubber or latex, was adopted and there were extensive developments in the improvement of sole and upper leather quality.

Many tanning processes were adapted to manufacture of leather for special military purposes, some of which were expected to be commonly employed in production for civilian use.

Research was conducted into the causes of the frequent failure of white shoe leathers. Much of this failure was traced to the use of cleaners, polishes and dressings containing methyl alcohol, ethyl alcohol, water, and such alkaline chemicals as trisodium phosphate, soda ash, ammonium hydroxide, and borax that cause shrinkage. The harmful effects of these were found to be largely offset by glycerine, sulphated alcohols, gums and sulphonated oils, all of which have an affinity for water and tend to prevent shrinkage. The leather industry conducted an intensive educational campaign to stimulate the manufacture and use of cleaners, polishes, and dressings which did not exert a harmful effect on white leathers, with noticeable improvement in this direction.

The oxygen bomb was adopted to accelerate aging during research in developing more permanent leathers, especially those for which a long life was expected, such as book binding, upholstery, bag and belting leathers. With the oxygen bomb test, the leather was exposed in a bomb containing initially an atmosphere of oxygen at 100 lb. pressure per square inch, and aged at 100° C. for seven days.

Énglish leather chemists developed methods for decontaminating leather affected by poison gas. This was one of the war developments in the leather industry for which no wartime use was required. However, other wartime developments along similar lines improved the wearing quality of leather under extreme atmospheric conditions such as prevailed in many of the theatres of war from frozen wastelands to jungle swamps.

Considerable study was made into the causes of gummy spew that sometimes forms on vegetable tanned leathers, and the prevention of this formation. The spew is caused by oxidization and gelation of the cod oil present in the leathers most affected, and is prevented by water solubles in the leather and by free fatty acids, either in currying oils and greases or formed afterwards. Spewing can also be prevented by the addition of anti-oxygens to the cod oil

British research workers developed a white leather made with formaldehyde without preparatory tannage with another material. The leather was full and had a strong grain; it was washable with soap and water and did not become tender upon storage, as did former formaldehyde tannages.

The importance of accelerating technological development was one of the major concerns of the leather industry at the end of the decade. It was pointed out that the time was ripe for rebuilding the physical structure of the

industry, already war-weary and in many instances obsolete.

Keen competition from other materials in the industry's most important markets was also a strong incentive to develop improved tanning machinery and equipment, more efficient techniques, and more effective merchandising policies and practices.

Tanners also foresaw the need for correlating engineering with chemistry. They pointed out that although tanning was essentially a chemical industry, no plant could set a program for greater efficiency and productivity without giving maximum thought to its machinery, plant layout and engineering research.

The quickened enthusiasm of the leather industry for an immediate and adequate revision of many technological and merchandising practices was explained by the potential demand for leather in the postwar years. It was probable that the over-all demand for leather would remain at a high level over a long period, barring sharp economic recessions. Whether the industry could meet all of this potential demand was a matter of speculation at the end of 1946, and depended upon the availability of raw stock. It was certain that leather would receive stiff competition from other materials, many of which were introduced during shoe rationing as substitutes for leather.

Shoes remained the chief market for leather; during the war years and the early postwar period, the demand for shoe leathers was urgent. Shoe production figures for 1946, including estimates for the last quarter, showed that pairs per capita rose 18.9% over the average of the prewar years 1936–40. That increase was attained even with sharp production losses during the third quarter, brought about by the meat shortage and the resultant leather raw stock shortage. In the second quarter of the year, production per capita was 37.8% higher than in the years 1936–40.

A trade authority estimated during World War II that the industry's prewar average of around 400,000,000 pairs a year would rise to a 600,000,000 pair level after the war. A number of factors at the end of 1946 seemed to lend weight to that prediction. There had been a population increase of 10,000,000. Much footwear was made of lighter materials and construction than a decade before, and thus had a shorter life of wear.

The leather industry was concerned because the percentage of cattlehide leather used for shoe production was declining. In 1939, 35.5% of all cattlehide leather was used for shoe sole leather, and 54.9% was used for shoe upper leather. Thus, in 1939, 90.4% of all cattlehide leather was used by the shoe industry. By 1945 those figures had declined, and only 30.9% of cattlehide leather went for shoe soles and 52.8% for shoe uppers. The shoe industry absorbed only 83.7% of the leather industry's most important leather.

The industry recognized the competitive advantages of plastics, synthetics and composition materials as leather substitutes. Frequently they could be offered at lower prices than leather and were uniform in quality. Many of the plants in which they were manufactured were new

Table IV.—Estimated Percentage of Leather and Nonleather Soles in Shoe Production, 1940-45

1940 1941 1942 1943

	1940		19	41	194	2	19	43	194	14	1945	
	Leather C	Other	Leather	Other	Leather	Other	Leather	Other	Leather	Other	Leather	Other
Men's dress	83.8	16.2	86.1	13.9	91.6	8.4	81.7	18.3 66.3	77.2 36.8	22.8 63.2	74.2	25.8 57.0
Men's work	43.3 82.3	56./ 17.7	49.2 85.8	50.8 14.2	<i>57.</i> 3 88.4	11.6	33.7 74.1	25.9	78.9	21.1	43.0 4.4	95.6
Youths' and boys'	42.9	57.1	43.7	66.3	52.1	47.9	37.1	62.9	29.7 69.0	70.3	36.5	63.5
Misses' and children's	76.2	23.8	77.3	22.7	81.4	18.6 16.7	69.3	30.7 30.4	54.8	45.2	54.5	45.5 43.1
All civilian types	/2.3	20./	/3.5	24.5	03.3	10.7	0,70	30.4	54.0	43.2	50.7	43.1

and operated with maximum production efficiency. Those factors could be overcome, the leather men felt, only by immediate improvement of the production and merchandising practices of the leather industry.

Trends in the use of nonleather materials for shoe manufacturing are clearly indicated in Table IV, which shows the ratio of footwear produced with leather and with nonleather soles.

The figures in Table IV reveal much of the industry's domestic marketing problem for the postwar years. There was little likelihood of an appreciably stimulated export market such as followed World War I. There might be a reverse stimulus to imports of finished leather and its products. (See Shoe Industry.) (R. B. B.)

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Lebanon

Lebanon, an independent republic, is bounded on the north and east-by Syria, on the south by Palestine and on the west by the Mediterranean sea. The population by the census of 1944 was 1,126,601; it was estimated at 1,137,000 in 1945. The capital is Beirut (est. 1943 pop. 234,000). Other cities: Tripoli (70,800); Sidon (Saida) (12,000); Juneh (12,000). The area is approximately 3,600 sq.mi. Arabic is the official language, though French is extensively used by the educated classes. Armenians use their own tongue as well as Arabic. Christians slightly outnumber Moslems, but both religions are divided into numerous sects.

Bishara el Khoury was elected president of Lebanon Sept. 21, 1943. Prime ministers during the decade 1937–46 were as follows: Khair ad-Din al-Ahdah (Jan. 9, 1937–March 20, 1938); Amir Khalid Najib Shihab (March 21, 1938–Jan. 22, 1939); Abdullah al-Yafi (Jan. 23, 1939–Oct. 1939 when the ministry was dissolved by French military decree); Alfred Naccache (May 1941–Nov. 26, 1941); Ahmad ad-Da'uq (Dec. 2, 1941–July 26, 1942); Sami As Sulh (July 28, 1942–March 18, 1943); Ayyub Tabit (March 19, 1948–July 5, 1943); Petro Trad (July 8, 1943–Sept. 21, 1943); Riyadh As Sulh (Sept. 25, 1943–Jan. 9, 1945); Abdul Hamid Al Karami (Jan. 11, 1945–Sept. 30, 1945); Sami As Sulh (Oct. 1, 1945–May 18, 1946); Saadi Al Munla (after May 23, 1946).

"Agreement" with France.-After many months of negotiations, a Franco-Lebanese treaty was initialled on Nov. 13, 1936, providing for recognition of Lebanon as an independent state and its introduction to the League of Nations within three years. France would retain the right to move its armed forces within the country freely. Though the treaty was generally popular, some groups were not enthusiastic about it. A few Moslems opposed an independent Lebanon because they desired union with Syria. Another group, mostly within the Maronite church, advocated outright annexation by the French. However, the strongest political party-the Constitutionalists, containing both Moslem and Christian leaders-was strongly nationalist. They enthusiastically greeted the restoration of the constitution by proclamation of the French high commissioner in Jan. 1937. Elections were announced, and the number of deputies was increased from 25 to 60.

The troubles of Lebanon were deep-seated. Under Turkish rule, the Moslem minority had enjoyed special privi-

leges. French officialdom, however, had identified itself closely with the Maronite church, granting it special cultural and financial privileges, while tending to ignore or discriminate against the Greek (Russian) Orthodox and the Protestant churches, and to reduce the relative importance of the Moslem community. Religious groups bore many characteristics of political parties. Because of the precarious balance between Christians and Moslems in numbers, neither religious bloc felt secure, and both reached out for help from abroad. The Moslems hoped to get inspiration and assistance from the great hinterland of Arabs with which they had easy land connections; at the same time the Christians sought encouragement and help from the western world, particularly France. Lebanon was the only region in the Moslem world where Christians outnumbered Moslems-and that only by a small margin. Christians, therefore, considered themselves a "beachhead" surrounded by the great masses of the Moslem world. They felt it imperative to keep the sea channels open to the western world if they were to survive absorption. Furthermore, since the land is mostly mountainous with a rigid economy, population pressure forced migration: the Moslems to neighbouring states and the Christians mostly to the western hemisphere. Again as a heritage of Turkish days, the government was dominated by the relatively few feudal families who exploited the country's meagre resources. Nepotism was so scandalous that an ordinance was passed limiting the members of a family who could draw government pay. Newspapers were owned by unscrupulous individuals who used them to vilify rivals. Suspensions and fines were commonplace. Thus, when elections were held in Nov. 1937, there was widespread buying of votes after which the top-heavy chamber of deputies assembled but failed to justify its existence.

These conditions gave rise to several nationalistic youth societies. Most aggressive was the secret "National Party" organized by Antun Saadi, a Christian who was convinced that the religious-political tie-up was a curse to the country. He advocated separation of church and state, the unity of greater Syria, radical reforms in education and government and strict discipline within his party. His views were bold and in some ways progressive, but there were other resemblances to totalitarian principles. His party was exposed in 1938, and Saadi fled to South America. But the idea of youth organizations took root in two other societies. The Christians organized the "Phalange Lebanaise" while the Moslems established the "Najjadeh" (Courageous Helpers), both of which grew and developed latent political power. They avoided the excesses which marked the "National Party" and followed more traditional lines.

By early 1939, it was evident that the French would not ratify the treaty of 1936. There were many signs of internal discord and also a series of small irritations when Lebanon and Syria indulged in petty discriminations over the "common interests." But the arrival of French troops in increasing numbers overshadowed local affairs. When war broke out in Europe in Sept. 1939, the high commissioner dissolved the chamber, dismissed the ministry, suspended the constitution and placed Lebanon under military rule. There was little reaction. Excitement and consternation spread in June 1940, when German forces crushed the French armies in Europe. The British hoped that Gen. Eugene Mittelhauser, commanding the forces in the Levant, would declare for the Free French and not adhere to the Vichy government, but on June 27 he ordered a cessation of hostilities. British and other Allied units then withdrew to Palestine in July 1940. The isolation of the French position accelerated economic deterioration.



Lebanese girls reading leaflets dropped by the R.A.F. to inform the people of Allied victories in North Africa at the close of 1942

Vichy Rule Ousted.-In May 1941, German combat planes used Syrian bases for hopping to Iraq to strengthen the abortive revolt of Rashid Ali Al Gailani. The British and Free French were forced to eliminate the axis threat to their flank in the middle east and on June 8, two columns of mixed units attacked from the south. Simultaneously General Georges Catroux, Free French commander, issued a proclamation which included this sentence, "I come to terminate the regime of the mandate and to proclaim you free and independent-your state of sovereignty and independence will be guaranteed by a treaty." Hopes that the Vichy French forces would come over to the Free French were dashed when it became apparent that they were fighting a battle of honour, showing traditional courage. At Marj Ayoun they counterattacked fiercely while at the crossing of the Litani river near Saidi, the Australian column was brought to a temporary halt. By July 10, however, British empire forces were in sight of Beirut, and the Vichy forces capitulated. The bulk of the combat forces chose to return to France, but most of the Vichy political officers chose to join the Free French and retain their positions. They continued to assert authority as though nothing had happened in the preceding five years. The political position of the three states-Great Britain, France and Lebanon-was ambiguous. The British assumed authority for regional military security while the French assumed internal security. To clarify their position, the British minister of state, Sir Oliver Lyttelton, wrote to Gen. Charles

de Gaulle on Aug. 15: "France should have the predominant position—over any other power." De Gaulle replied, "—the pre-eminent and privileged position."

The Lebanese nationalists refused to admit that their independence was conditional upon a French treaty and that any state should have a privileged position. They demanded rapid implementation of the Catroux proclamation. On Nov. 26, 1941, the French officially announced the independence of Lebanon, but for more than a year this declaration remained an empty gesture. The British encouraged an early election, while the French found reasons for indefinite delays. Finally, on March 19, 1943, a temporary government was appointed under Dr. Ayyub Tabit to prepare for elections. There were months of protracted negotiations on the knotty question of proportionate representation. In the electoral list prepared by Tabit, thousands of emigrants had been included. This was challenged by the Moslems, who noted that the emigrants were practically all Christians and that this practice would reduce the proportion of Moslem deputies. Dr. Tabit was finally replaced by M. Petro Trad; the number of deputies was set at 30 Christian and 25 Moslem and the elections set for Aug. 1943.

Franco-British Friction.—An incident during the election campaign exposed the underlying ill feeling of the French toward the British. The "boss" of Tripoli was a rather notorious character, Rashid Muqaddam, who was commonly reputed to be involved in numerous illegal activities, protected his interests with a band of thugs and was considered to be a French tool. After filing his

candidature as a deputy, a British captain and a soldier were caught carrying "hashish" (marijuana) in a military truck. They declared that they were suborned by Muqaddam. A raid upon his summer house yielded 22 tins of the expensive but forbidden extract in his cellar. The British were about to try him before a military court for suborning military personnel when the French insisted on trying him first before a civil court on the charge of smuggling, after which they promised to let the British have him for a second trial. The British consented, whereupon the civil court found him innocent. The French then refused to give him to the British inasmuch as the court had declared him innocent of smuggling, wherefore he could not be tried for suborning on the same count. Muqaddam then resumed his candidature. The British, thoroughly exasperated, put him under military guard and later removed him to Cyprus where he stayed till shortly before his death in 1944. As a result the nationalist Abdul Hamid Al Karami, Muqaddam's rival, won the seat. In revenge the Muqaddam family attempted to assassinate Karami after he became prime minister in Jan. 1945. Such incidents deepened suspicions on the part of all the parties concerned.

The elections were completed in Aug. 1943. In Tripoli, members of the Muqaddam group attempted to threaten opposition by gun play, and in other instances where the vote was in doubt, money flowed freely. The so-called pro-French party was led by Emile Edde, a Maronite who had always been closely associated with French influence, while the anti-French Constitutionalists were led by Sheikh Bishara el Khoury, another Maronite who had distinguished himself in co-operating with liberals and Moslems alike. The latter group swept into office by impressive majorities. The newly elected chamber of deputies met on Sept. 21 and amidst scenes of enthusiasm chose Bishara el Khoury as president. The latter asked Riyadh Bey As Sulh, veteran political leader of the Moslem community, to form a government. On Oct. 7, the government outlined a series of almost radical reforms, among which was that of amending the Organic law. Woven throughout the law were references to the rights of the mandatory power. Lebanon, acting on the thesis that it was now a sovereign state, intended to delete all passages which limited their freedom of action. The French National committee in Algiers argued that such deletions could not be made unilaterally but only upon consultation with the mandatory power and approval by the League of Nations. Weary and suspicious of French dilatory tactics, the chamber met on Nov. 8, hastily decided that the authority to amend the law was vested in the Lebanese government alone, and by a vote of 44 in the affirmative, struck out all mention of French rights. Emile Edde and a few of his party left the chamber.

France's Losing Struggle for Control.—The French delegate general, M. Helleu, retaliated early on the morning of Nov. 11 by arresting the president, most of the cabinet and 48 members of the chamber, dissolving the chamber and establishing a de facto government under Emile Edde. Two cabinet members fled to the mountains and set up a "mountain government" to fight the French. French troops fired upon demonstrators in Beirut. An avalanche of protests poured in on the French from the Arab states and the U.S.A. General Catroux flew from Algiers to Cairo and was bluntly told by the British that the Lebanese government should be restored or the British would declare martial law. The French committee in Algiers was dangerously split, but the majority voted to acquiesce. On the 21st the prisoners were released, M. Helleu was recalled and Bish-

ara el Khoury resumed office with the remark, "We continue as if nothing has happened. There is no constitutional issue." The ill-advised act of the French had united Lebanon as it had never been before, and it had profoundly weakened French prestige. The French blamed the whole affair on British and United States intrigue. They singled out Sir Edward Spears as the instigator of the revolt and George Wadsworth as his abettor. The former was appointed British minister to the Lebanon in Aug. 1944, and the latter U.S. minister on Sept. 8, 1944. The soviet union recognized Lebanese independence in July 1944. However, it was Syria which profited most by the incident, for it learned that to be independent, a state must act independently.

During 1944 there were endless conferences between Lebanese, Syrian and French representatives over the transfer of "common interests" such as communications, railways, antiquities and customs. In July the French tried to get agreement on a "university convention" to rivet French cultural controls upon Lebanon (which the latter refused) but when the question of transferring the Troupes Spéciales arose, France balked unless Lebanon and Syria would first sign a treaty recognizing French privileges. This Lebanon resolutely refused to do. In this stand they were encouraged by the other Arab states, which sent representatives to Alexandria in Sept. 1944 and set up machinery for establishing an Arab league (q.v.). In March 1945, a second conference was held to approve the Arab League constitution. The Sulh government had fallen in the meantime. It had been charged with corruption and laxity in facing the problems of economic shortages and inflation. In Jan. 1945, Abdul Hamid Al Karami had assumed the office of prime minister and had selected Henri Pharoan, a Greek Orthodox merchant of great wealth and vigour, as foreign minister. Pharoan vigorously insisted on the right of Lebanon to complete sovereignty before he would sign the constitution of the league. The Christian majority in Lebanon did not want the Arab League to become a super-state in which they would become a minuscule minority among 30,000,000 Moslems. Pharoan won his point. Although it weakened the Arab League, it preserved the sovereignty of Lebanon.

Karami energetically attacked the internal problems facing the country. In addition to the perpetual difficulties of Lebanon, the war had imposed three special types of stresses: (1) the Vichy French had sent out all the country's gold, and stocks of imported manufactured goods had been depleted; (2) large Allied armies were in training, and purchases of goods and services had put large sums of paper money into circulation; a military railway had been built along the coast from Haifa to Tripoli, employing many local labourers; (3) most of the deputies and people of political influence were either holders of land or owners of industrial establishments. They were selfishly opposed to price controls, and their wealth had been multiplied many times. Prices in 1945 were 600% of those obtained in 1939. After the liberation of France, French officers and merchants began to buy unusual quantities of goods to send to France-threatening price chaos in Lebanon. Karami went to Gen. Etienne Beynet, French delegate, and arranged to have wholesale shipments to France curtailed. He seized textile mills, reducing the price of yarns by half. But he found his efforts opposed and often frustrated by multiple intrigues on the part of groups of deputies. Riyadh Bey assumed an attitude of opposition and his followers called for repeated votes of confidence. Karami decided that a constitutional change was necessary which would free the cabinet from attacks by lobbies and blocs in the chamber. Thoroughly exasperated by the tactics used against him, after receiving a vote of confidence, he resigned on Sept. 30, after nine months in office. His regime had been one of forthright and honest effort unequalled in modern Lebanese history. It was followed by the colourless and uninspiring government of Sami As Sulh, cousin of Riyadh Bey.

With the end of the war in Europe, France began to send fresh troops to the Levant. The arrival of the first contingent in Beirut on May 17, 1945, lit the fuse which led to the explosion in Syria when the French bombarded Darnascus on May 27-28. British intervention followed two days later. Lebanon was tense, but no major incidents took place. After June 1 began the transfer of French troops and civilians from Syria to Lebanon. Both pro- and anti-French sentiments were intensified by the events taking place. Some Christian leaders identified hopes of their survival with the continuation of French privileges and arms. On e prominent Maronite churchman went to Paris to urge the French to stay in Lebanon at all costs. Another churchman went to Rome to enlist the support of the papacy. But by far the majority of the Christian leaders believed that the association between Christianity and the French empire had become obsolete and perhaps even harmful. They argued that the Christian groups should seek wider cultural bonds with the entire western world. Syria meanwhile recalled how, in July 1920, the French had used Le banon as a base for launching an attack on Syria, wherefore it insisted that the French withdraw from Lebanon

Negotiations between French and British military representatives began on Dec. 13, 1945, but bogged down in misunderstandings and suspicions. Lebanon and Syria then joined in appealing to the Security council of the United Nations in London. On Feb. 16, 1946, the United States representative proposed its policy that no nation keep its armed forces in the territory of another independent state against the desire of its government, suggesting withdrawal of both British and French forces as soon as practicable. The soviet union, hoping to make political capital out of the issue, vetoed the motion, but seven other states approved it. The French and British announced that in spite of the veto, they regarded the majority opinion as mandatory. By June 20, 1946, the last British unit had evacuated and the last French unit was scheduled to leave by Aug. gr, leaving only a few officers and men to finish the task of complete liquidation.

The little land which had, for millennia, been the threshold by which western influences and armies had penetrated the east, and by which eastern ideas and trade had flowed westward, was now a free country. No one expected its future course to be easy. Conflict, struggle, synthesis and compromise had ever been the sine qua non of Lebanese existence.

For statistics relating to Lebanon, grouped together with Syria during most of the decade 1937-46, see Syria. (See also Mandates.)

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Leclerc, Jacques

Leclerc (1902-), French army officer and nobleman, was born in northern France. After graduation from St. Cyr academy, he served in French and Moroccan garrisons as a lieutenant, and was a major when the Germans invaded France in May 1940. Wounded and taken prisoner during the campaign, Leclerc managed to escape to England where he joined the De Gaullist forces. (He did not use his full name, Jacques Leclerc de Hauteclocque, after he joined the Allied forces for fear that his family, then in France, would suffer reprisals.) Assigned to a post in the Cameroons, he was promoted to a colonelcy, and was named a brigadier general in Aug. 1941. In late 1942 he led a column of French and native forces that staged a 1,500-mi. trek in 39 days northward across the Libyan desert to join the British 8th army in Tripoli on Jan. 25, 1943. In 1944 Gen. Leclerc and his French 2nd armoured division were in Normandy. His division was the first to enter Paris, and Leclerc himself supervised the surrender of the German garrison in the French capital on Aug. 25, 1944. In 1945 he was placed in command of the French Pacific force, and when the uprising of the Annamese started in Indo-China, he led the French troops in the suppression of the rebellion. Gen. Leclerc was the French representative at the signing of the Japanese surrender articles in Sept. 1945.

Lee, John Clifford Hodges

), U.S. army officer, was born in Junc-Lee (1887tion City, Kan., on Aug. 1, 1887, and was graduated from the United States Military academy in 1909. He served as an officer in the corps of engineers at various posts in the U.S., Philippines and Panama Canal Zone. In 1917 he was aide to Maj. Gen. Leonard Wood, and later became acting chief of staff of the 89th division. He served in France in World War I, saw action in the St. Mihiel and Meuse-Argonne offensives, and after the armistice was with the U.S. army of occupation in Germany. For his service in World War I he was awarded the distinguished service medal and silver star by the U.S. and the legion of honour and croix de guerre with palms by France. He returned to the U.S. in 1919 and was for a time attached to the office of chief of engineers in Washington, D.C.

In 1940 and 1941 Lee was in command of the port of embarkation at San Francisco, Calif. Named major general in Feb. 1942, he was placed in command of the services of supply in the European theatre of operations. In Jan. 1944 Gen. Eisenhower appointed Lee his deputy commander in the European theatre, and in Dec. 1945 Lee was named Mediterranean commander and deputy supply commander of the Mediterranean theatre.

Leeb, Wilhelm Joseph Franz Ritter von

Leeb (1876—), German army officer, was born Sept. 5, 1876, in Landsberg-am-Lech, Bavaria. He joined the army at the age of 19, later serving in the German expeditionary force to China during the Boxer rebellion. Upon his return to the reich, he entered the war academy and served on the German general staff during World War I. Following the war, he participated in the suppression of communist uprisings in Bavaria, after which he rose to the rank of general. In 1935 he was made one of the three army group commanders of Germany, and was assigned to group No. 2 based at Cassel. During Hitler's purge of army officers in 1938, Leeb resigned his post, but was

later recalled to take command of an army of occupation in Czechoslovakia. In 1940 he commanded the German troops on the Rhine, storming through the Maginot line after the collapse of the French armies in the north. When German armies invaded the U.S.S.R. in 1941, he was assigned command of the German armies assaulting Leningrad. Marshal von·Leeb's armies pushed back the Russian forces virtually to the gates of Leningrad in the fall of 1941, but by June 1942 his forces had been completely routed and he was reported removed as commander of the north front in Sept. Leeb was captured by U.S. troops in March 1945.

Leese, Sir Oliver W. H., 3rd Baronet

Sir Oliver Leese (1894-), British army officer, was born Oct. 27, 1894. During World War I he was wounded three times. Having held a number of different staff positions between wars, he was appointed, early in World War II, deputy chief of general staff to the British expeditionary forces. He was evacuated from Dunkirk in a small rescue boat and returned to England with Field Marshal John Gort. In 1942 he went to the middle east as a temporary lieutenant general and commanded the 30th corps of the 8th army in the drive from El Alamein to Tunisia, and later led it into Sicily. He succeeded Gen. Sir Bernard Montgomery as 8th army commander in 1944 when Montgomery was named to head the British invasion forces in England. In Nov. 1944 he was appointed commander of the newly organized 11th army group, which included some U.S. troops formerly commanded by Gen. Joseph W. Stilwell, and which was to operate in southeast Asia under Adm. Louis Mountbatten. One of the youngest corps commanders in the empire, Sir Oliver was created a knight commander of the British empire for his part in the defeat of Field Marshal Erwin Rommel in Africa, and won the Order of the Bath after the Sicily campaign.

Leeward Islands

See WEST INDIES, BRITISH.

Legislation

See Business Review; Law. See also under individual countries.

Lehman, Herbert H.

Lehman (1878—), U.S. politician, was born March 28, 1878. He was graduated from Williams college, Williamstown, Mass., in 1899. He later entered the textile business and in 1908 became a partner in Lehman Brothers banking house, where he remained until World War I. After serving as civilian assistant to Franklin Delano Roosevelt, then assistant secretary of the navy, he joined the army in Aug. 1917, was commissioned a captain and assigned to the general staff. He eventually attained the rank of colonel in the quartermaster corps and was awarded the D.S.M. in 1919.

After World War I, Lehman returned to the banking business.

Having served two terms as lieutenant governor of New York, Lehman was elected to the first of four terms as governor in 1932. He declined renomination in 1942 and was appointed director of foreign relief and rehabilitation by President Roosevelt. In Nov. 1943 he assumed office as director general of the United Nations Relief and Rehabilitation administration. In spite of a reorganization

of U.N.R.R.A. offices undertaken by Lehman in May 1945, the administration was criticized by many. Lehman vigorously denied charges that the distribution of relief in Europe was often dependent upon Russian political strategy, and urged the need for larger appropriations. In March 1946 he resigned as director general of U.N.R.R.A because of ill health.

LeMay, Curtis E.

LeMay (1906—), U.S. army air officer, was born Nov. 15, 1906, in Ohio. A graduate of the Air Corps Primary Flying school, he enrolled as a flying cadet in the air corps in 1928, and studied at the Advanced Flying school in 1929 and at the Air Corps Tactical school in 1939. He had been commissioned a second lieutenant in 1930, and advanced through the grades to brigadier general in Sept. 1942 and major general in March 1944. After the start of World War II, LeMay was commanding general of the heavy bombardment division of the 8th air force in England.

In Aug. 1944 he was named chief of the 20th bomber command, in charge of B-29 superfortress missions in the China-India-Burma theatre of operations. He received the D.S.M. in Dec. 1944, and was appointed chief of staff to Gen. Carl A. Spaatz, commander of the U.S. strategic air force in the Pacific, in July 1945.

Lemons

See FRUIT.

Lend-Lease

The "Lend-Lease act," as it became popularly known, was enacted by congress on March 11, 1941, and became law the same day when the president affixed his signature. The bill was introduced in congress as H. R. 1776 on Jan. 10, 1941, and was entitled "An Act to Promote the Defense of the United States." Passage of the bill on March 11, 1941, followed two months of public hearings and debate in both the house and senate, for the importance of the law as a clear and positive statement of the position of the United States with respect to the European war was recognized by the overwhelming majority of the citizens of the country.

The Lend-Lease act provided that the president might "sell, transfer title to, exchange, lease, lend or otherwise dispose of" defense articles to the government of any country whose defense he deemed vital to the defense of the U.S. The benefit to the U.S. was to be "payment or repayment in kind or property, or any other direct or indirect benefit which the President deems satisfactory." Administratively, the Lend-Lease act permitted the president to determine where arms and other defense articles manufactured in the United States would contribute most to U.S. security—whether it be in the hands of those countries then resisting nazi aggression or in the hands of the military forces of the United States itself.

Within three hours after he signed the Lend-Lease act on March 11, 1941, the president issued two directives putting the lend-lease program in motion. The first declared the defense of Great Britain vital to the defense of the United States and authorized the secretary of the navy to turn over to the British 28 P.T. and P.T.C. motor boats, together with certain facilities for arming merchant ships. The second declared the defense of Greece vital to the defense of the United States and authorized the secretary of war to transfer to the Greeks guns, shells and other infantry equipment.

The first lend-lease funds, \$7,000,000,000, were appropriated to the president by congress on March 27, 1941.

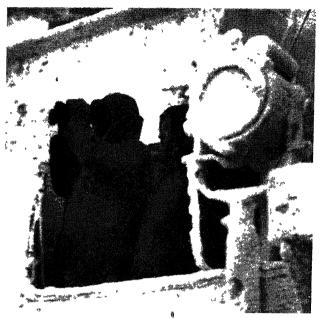
Congress subsequently appropriated an additional \$20,877,937,000 to the president for lend-lease purposes, making a total of such appropriations \$27,877,937,000 during the life of the Lend-Lease act. In addition, congress authorized the transfer for lend-lease purposes of \$35,970,000,000 from appropriations made to the war department and the navy department. Thus, a grand total of \$63,847,937,000 was appropriated by congress for lend-lease aid.

The Lend-Lease act was administered from May 2 to Sept. 16, 1941, by the Division of Defense Aid Reports, in the executive office of the president. On Sept. 16, 1941, Edward R. Stettinius, Jr., was appointed lend-lease administrator. The Office of Lend-Lease Administration was established by executive order on Oct. 28, 1941.

During the course of World War II, 44 countries were declared eligible by the president for lend-lease aid. Total lend-lease aid reported transferred and made available to foreign countries from the beginning of the program on March 11, 1941, through Dec. 31, 1945, amounted to \$50,-692,109,000. Countries receiving this aid and the date upon which they were declared eligible for lend-lease were as follows: Argentina (May 6, 1941), Australia (Nov. 11, 1941), Belgium (June 13, 1941), Bolivia (May 6, 1941), Brazil (May 6, 1941), Canada (Nov. 11, 1941), Chile (May 6, 1941), China (May 6, 1941), Colombia (May 6, 1941), Costa Rica (May 6, 1941), Cuba (May 6, 1941), Czechoslovakia (Jan. 5, 1942), Dominican Republic (May 6, 1941), Ecuador (May 6, 1941), Egypt (Nov. 11, 1941), El Salvador (May 6, 1941), Ethiopia (Dec. 7, 1942), France (Nov. 11, 1941), Greece (March 11, 1941), Guatemala (May 6, 1941), Haiti (May 6, 1941), Honduras (May 6, 1941), Iceland (July 1, 1941), India (Nov. 11, 1941), Iran (March 10, 1942), Iraq (May 1, 1942), Liberia (March 10, 1942), Mexico (May 6, 1941), Netherlands (Aug. 21, 1941), New Zealand (Nov. 11, 1941), Nicaragua (May 6, 1941), Norway (June 4, 1941), Panama (May 6, 1941), Paraguay (May 6, 1941), Peru (May 6, 1941), Poland (Aug. 28, 1941), Saudi Arabia (Feb. 18, 1943), South Africa (Nov. 11, 1941), Turkey (Nov. 7, 1941), United Kingdom (March 11, 1941), U.S.S.R. (Nov. 7, 1941), Uruguay (May 6, 1941), Venezuela (May 6, 1941), Yugoslavia (Nov. 11, 1941).

Lend-lease aid furnished by country was as follows:

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	Venezuela	
	Not charged by country	2,090,744,000
	Total lend-lease gid	\$50,692,109,000



Snow-encrusted signal bridge on a British cruiser convoying lendlease materials along a zigzag route to the U.S.S.R. early in 1942

The categories in which lend-lease aid was furnished were as follows:

Ordnance																	\$1,433,601,000
Ammunition																	2,957,410,000
Aircraft									٠								5,320,833,000
Aeronautical Material .								٠									3,247,718,000
Ordnance vehicles			٠														3,781,953,000
Motor vehicles			٠					٠									2,546,935,000
Watercraft			٠	•	•		٠	٠	٠				٠				4,057,442,000
Petroleum products			٠	•			٠	٠	٠	٠							2,731,199,000
Military clothing		٠	٠	٠	•	•		٠	٠	٠		٠	٠				639,036,000
Signal equipment			٠	•		٠	٠	٠		•		٠	٠		٠	•	1,236,888,000
Engineer equipment			٠	•	٠	٠	•	٠			٠	٠	٠	٠		٠	808,648,000
Chemical warfare equip	oment		٠	٠	•	•	•	٠	٠	٠		٠	•	•	•	٠	236,551,000
Other military equipmen	nt	٠	٠	٠	٠	٠	٠	٠	٠	٠	٠	٠	•	٠	•	٠	966,763,000
Industrial equipment .																	8,360,623,000
Food																	5,828,716,000
Other agricultural produ	ucts	٠	٠	٠	٠	٠	٠	•	٠	٠	٠	٠	٠	٠		٠	852,913,000
Services	• •		:	٠	•	٠	٠	•	٠	٠	•	•	•	•	٠	٠	3,594,136,000
Lend-lease costs not cha	ırged	to	to	re	ıgr	g	٥v	er	nm	en'	5	•	٠	٠	٠	٠	2,090,744,000
Total		٠	٠	•	•	•	•	٠	•	•		•	•				\$50,692,109,000

During the course of the war, the U.S. received "reverse lend-lease" or "reciprocal aid" having a total reported value of \$7,819,332,000. This aid was furnished in the form of airfields, barracks, hospitals, storage depots, food and clothing, gasoline, shipping services, transportation and communication facilities. Countries furnishing this aid were as follows:

																				\$6,752,073,000
																				760,696,000
																				107,085,000
																				182,603,000
																				339,000
																				8.273,000
																				1,133,000
																				1,235,000
																				3,672,000
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On Sept. 25, 1943, the Lend-Lease administration was transferred to the Foreign Economic administration and Leo T. Crowley was named Foreign Economic administrator.

On Oct. 20, 1945, the Foreign Economic administration was abolished and the then remaining lend-lease functions were transferred to the department of state.

Four months after the termination of hostilities, on Dec. 6, 1945, a lend-lease settlement was agreed upon between the United States and Great Britain. The settlement provided that "the net sum due from the United Kingdom to the United States for the settlement of lend-lease and re-



Reverse lend-lease equipment for aircraft of the U.S.A.A.F. at a British air depot. This picture shows part of the stores of gas tanks and flame dampers earmarked for U.S. planes operating in the European theatre

ciprocal aid, for the acquisition of surplus property, and the United States interest in installations, located in the United Kingdom, and for the settlement of claims shall be \$650,000,000," subject to certain accounting adjustments.

The lend-lease settlement with France was concluded on May 28, 1946. In addition to finally disposing of the accounts for lend-lease and reciprocal aid, the agreement settled all outstanding claims between the two governments arising out of the war. On the balance of these accounts and claims, France undertook to pay the United States \$420,000,000.

The final settlement with India for lend-lease, reciprocal aid, and surplus war property located in India, and for financial claims of each government against the other arising as a result of the war was signed on May 16, 1946. It was agreed that no payment would be made by either government for lend-lease and reciprocal aid items made available to the other government.

The final settlement of the lend-lease and reciprocal aid accounts with Australia was signed on June 7, 1946. The agreement provided there should be no payment by either government to the other for the goods and services transferred.

(See also Agriculture; Aviation, Military; Exchange Control and Exchange Rates; Great Britain and Northern Ireland, United Kingdom of; International Law; Investments Abroad, U.S. and British; Tariffs; United States; War and Defense Agencies; War Production.) (L. T. C.)

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Leningrad

During the short Russo-Finnish War of 1939-40, Leningrad, the old capital of tsarist Russia, was bombed by Finnish planes with propaganda leaflets to show the ease with which it could be hit with explosives. But after the German attack on the soviet union on June 22, 1941, the city became the target not only for destructive air raids but for axis long-range artillery. The German drives toward Leningrad were aimed at cutting off the city, appropriating its economic and industrial resources, separating the U.S.S.R. from its allies, and using the city as a pivot for an axis drive north to Murmansk and Archangel as well as for an assault to the south on Moscow. This offensive, then, resulted in one of the major battles of the war and one of the longest sieges. By mid-August, 1941, axis troops had cut the Leningrad-Moscow railway and surrounded the city. Thereafter, for 29 months, many Russian divisions were locked within the city, surrounded by German, Finnish and Rumanian armies that made repeated large-scale attacks in which the city was heavily damaged. The inhabitants, reduced to short rations to prevent famine, barricaded the streets in the event of a major break-through, and continued, amid the confusion, wreckage and suffering, to work day and night in war plants that turned out 46-ton tanks, ammunition and other essential materials. Martial law was proclaimed in the city from the beginning of the assault; old men, women and even children were formed into home-defense troops. The Russians, fighting for their lives, made frequent counterattacks, one of these, in Jan. 1943, forcing a breach nine miles wide and six miles deep through which supplies could be brought in over land routes to ease the threatened famine. By February Russian armies were fighting along a front extending from Leningrad to the Black sea. Though German forces had been at the near approaches of Leningrad for 17 months, nowhere had they penetrated the city to maintain a permanent

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hold. The siege was officially declared ended on Jan. 18, 1943, and, though completely wrecked, the city was out of danger.

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Leopold III

King Leopold of Belgium (1901-), was born Nov. 3, 1901, the son of King Albert I. He served in World War I and studied at Eton college, England. He was married on Nov. 10, 1926, to Princess Astrid of Sweden, who was killed in a motorcar accident in 1935. On Feb. 17, 1934, he succeeded his father as king of the Belgians. Leopold joined with the kings of Norway, Denmark, Sweden and Holland in a final effort in 1989 to secure peace by mediation. At the start of the German invasion on May 10,, 1940, Leopold assumed command of his armies and appealed to France and Britain for aid. His unconditional surrender of May 28 caused a storm of indignation among the Allies and many of his own subjects. On Sept. 11, 1941, while in captivity, Leopold was permitted to marry Mlle. Mary Lelia Baels, a commoner, who took the name of Princess de Réthy. Several days after the Allied invasion of Normandy in June 1944, the Germans moved Leopold from his palace at Laeken, near Brussels, where he was being held in custody, to a location deeper within the reich. In May 1945 U.S. 7th army troops liberated the Belgian king and his wife near Strobl, Austria. The king's desire to resume his throne was opposed by the Belgian government on charges that his surrender in May 1940 was suspect. Leopold answered that he yielded because he felt that he should stay with his people. Although both houses of Belgium's parliament voted to bar his return, Leopold refused to abdicate. He was said to be waiting for a shift in Belgium's political balance from left to right before making another effort to return to his homeland.

Lepidolite

See LITHIUM MINERALS.

Leprosy

During the period 1937-46, little was added to the already known facts in the aetiology, epidemiology, clinical behaviour and pathology of leprosy. Mycobacterium leprae, the generally accepted cause of the disease, had not yet been successfully cultured either on artificial media or in the presence of living cells. Leprosy research continued to be hampered also by the failure to find an animal in which human leprosy could be produced experimentally. For a short period during this decade there was hope that a Syrian hamster would prove to be the susceptible animal, but again results were disappointing.

Another leprosy "cure" was briefly though widely heralded by the lay press. The diphtheria toxin-antitoxin and toxoid treatment, enthusiastically reported from Siam in 1940, was given prompt and fair trial by leprologists in other countries with almost universal agreement that it was without beneficial effect.

The popularity of chaulmoogra oil and its derivatives in the treatment of leprosy seemed to decline steadily. This drug, used before the 20th century, gained widespread acclaim after very favourable reports made in 1920 by workers in Hawaii. In 1942 an observer who had used it a quarter of a century before made a careful analysis of reports and opinions of leprologists who had used it extensively. He concluded that chaulmoogra oil and its derivatives were of doubtful value in treating leprosy.

The natural tendency of leprosy to heal spontaneously in many cases made evaluation of all therapy very difficult. In general, about 20% of those segregated for leprosy became arrested without treatment. All reports on the beneficial results of any treatment had to be weighed carefully with emphasis on this natural tendency toward healing. Reports on the use of the newer chemotherapeutic agents had to be viewed in this light.

Observers at the National Leprosarium, Carville, La., made detailed studies of cases treated by several sulfone drugs. Sulfanilamide was found to have some effect on the complications of leprosy but none on the disease itself. Promin (a sulfone drug) was used intravenously on a total of 137 patients with encouraging results. Of 42 patients who would be continued on treatment more than 2 years, 73.8% were classified as improved. Another sulfone derivative, diasone, suitable for oral administration, was given to 104 patients. Objective improvement was observed in 65% of those treated 6 months or longer (66 cases). This reported improvement seemed especially significant, as 74.2% of the cases were the type (lepromatous) usually offering the poorest prognosis.

The leprologists conducting these therapeutic experiments did not believe that a "specific" treatment for leprosy had yet been offered. However, they were encouraged by results obtained and were hopeful that more efficacious drugs would be produced.

The antibiotics were also tried. Penicillin in a preliminary report seemed of no value. Streptomycin was also under study.

The succeeding decades would probably see an increase in leprosy in areas where it was not previously endemic. Possibly because of exposure in the West Indies or in the Philippines, 32 U.S. veterans of the Spanish-American War were later admitted to the National Leprosarium at Carville, La. World War II required millions of military and civilian personnel to spend much time in regions where leprosy was prevalent. Some of these people would probably develop leprosy. (See also Dermatology.)

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Lespedeza

See HAY.

Lettuce

Commercial lettuce crops continued their steady increase in the United States through the decade 1937–46. Following World War I, the crop began to expand rapidly and in 10 years grew from an annual production of about 4,000,000 crates to 18,600,000 crates. The increases were less rapid for the next 10 years, and in 1937 a crop of 21,135,000 crates was reported. After 5 years another period of rapid increase began, stimulated by the high prices of

the war period; by 1945 the total crop was 29,648,000 crates compared with the 1934-43 average of 21,572,000 crates.

These crops were grown on acreages ranging from 151,-750 ac. in 1937 to 172,650 ac. in 1945 and 185,250 ac. in 1946. The big yields were due to favourable seasons, since as early as 1931 an acreage of 173,300 ac. was planted but the yield was only 116 crates per ac. compared with a yield of 179 crates per ac. harvested in 1943. Methods of culture had improved greatly during the period. The principal stimulus to expansion was the growing demand from consumers with better incomes. The practice of eating midday lunches in war plants, drug stores and other quick-lunch establishments added to the popularity of the green salad. Prices of lettuce to growers ranged from \$1.30 to \$1.80 per crate during the prewar decade and did not increase materially until the United States entered the war. The average price to growers in 1941 was \$1.67 per crate; it was \$2.54 in 1942, \$3.31 in 1943, \$2.57 in 1944 and \$2.92 in 1945. Prices were at the ceiling levels most of the time, and shipments were restricted at times. The U.S. department of agriculture advised a reduction in acreage in 1943, and a smaller acreage was planted; because of good yields, however, the output increased over that of 1942. The output of victory gardens had no evident effect on the commercial demand. The largest increases were in California in the winter and midsummer crops.

Experiments in shipment by aeroplane were tried in 1944 with promising results. Shipments from California to Detroit, Mich., showed that the use of lighter packages would effect a saving. While the fresher product brought quickly by aeroplane sold at five cents per head premium in competition with the rail-shipped product, the conclusion was that airborne products would have to be sold at a premium until costs could be reduced. As soon as air freight rates were adjusted such transportation might become a commercial practice for the highest quality product. The expansion in lettuce production was not that of a single vegetable crop. The 25 commercial truck crops set a new record in 1945, about 12% above the previous record in 1943. In value of the total crop, lettuce was exceeded only by tomatoes. The total value of the lettuce crop to

U.S. Lettuce Production, 1937-46 (In thousands of crates)

	1937	1939	1941	1942	1943	1944	1945	1946
U.S. Total	21,135	24,004	23,042	23,604	24,416	28,690	29.648	34,504
Early winter	5,109	6,670	5,261	5,690	5,723	7,243	7,208	9,387
Early spring	6,527	7,485	6,541	6,904	6,565	8,045	8.558	8.391
Late spring	937	801	925	836	862	1,067	1,012	1,309
Summer	3,737	4,144	5,512	5,209	5,443	6,143	6,596	7.450
Fall	4,825	4,904	4,803	4,965	5,823	6,192	6.274	7.967

growers increased from \$32,666,000 in 1937 to \$80,768,000 in 1943. This income went chiefly to growers in special truck-growing areas, such as southern California, Florida, Texas, etc., and not to widely distributed farmers. The technical improvements in culture, disease control and use of specialized machinery made possible the expansion of the commercial vegetable industry. (See also Vegetables.)

(J. C. Ms.)

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Lewis, John Llewellyn

Lewis (1880—), U.S. labour leader, was born Feb. 12, 1880, in Lucas, Ia., the son of a Welsh coal miner. After seven years of schooling he was compelled, because of his

family's financial need, to leave his studies and enter the mines. His success as legislative agent for the United Mine Workers of America in Illinois after 1909 led to his appointment as American Federation of Labor organizer in 1911. He became vice-president of the United Mine Workers of America in 1917, and in 1920 was named president. Lewis had long favoured the industrial organization of mass-production industries, contrary to the principles of traditional A.F. of L. craft unionism. In 1935 he formed the Committee for Industrial Organization. When he refused to heed the order of the A.F. of L. executive council to dissolve the committee, the participating unions in the C.I.O. were suspended in 1936 and the following year were expelled from A.F. of L. membership. In its 1938 convention, the C.I.O. defined its position and adopted the name Congress of Industrial Organizations.

Lewis supported Roosevelt in the 1936 presidential campaign, but in 1940, in protest against Roosevelt's interventionist foreign policy and a domestic policy considered not too friendly to labour, he threw his support to the Republican candidate, Wendell Willkie, and promised to resign as C.I.O. chief if Willkie lost. He made good his promise and was succeeded by Philip Murray, but he retained the U.M.W.A. presidency. His growing antagonism toward Murray and his dissatisfaction with the pro-Roosevelt activity of the C.I.O. resulted, in Oct. 1942, in the withdrawal of the mine workers from the C.I.O. Lewis made several attempts to return to the A.F. of L. in 1943 and again in 1945, but negotiations between the two organizations were not satisfactorily concluded until Jan. 25, 1946. The U.M.W.A. was readmitted to the A.F. of L., and Lewis was made the 13th vice-president of the parent body and a member of the council.

During the war Lewis risked unpopularity and government intervention when he called the mine workers out on strike in protest against low wages and bad working conditions. Two strikes in 1945 and two in 1946, which had nation-wide repercussions, achieved part of the workers' demands. The last strike of 1946 threatened to cripple the nation's economy and resulted in a \$10,000 fine for Lewis and a \$3,500,000 fine for the U.M.W.A. after Lewis ignored a preliminary injunction forbidding the strike. None of the workers' demands was met, and the case was taken to the supreme court.

Ley, Robert

Ley (1890-1945), German politician, was born Feb. 15, 1890, in Niederbreidenbach, Germany. He studied at the universities of Jena and Bonn, received a Ph.D. in chemistry and worked for I. G. Farbenindustrie for seven years (1921-28), before he was discharged for "political activity." He was elected as nazi member to the Prussian diet in 1929, and to the reichstag in 1932, and was made head of the German workers' front after Hitler became chancellor. During World War II, he supervised the mobilization of foreign as well as German labour for war work. Although he had been named in April 1945 as head of a special Adolf Hitler volunteer corps which was to function as guerrilla fighters, he fled to the mountains near Berchtesgaden where he was captured by U.S. troops on May 16, 1945. He attempted to take his life but failed and was arraigned as a war criminal. On Oct. 25, 1945, he hanged himself with a towel in the Nuernberg prison where he and 23 other nazis were awaiting trial as war criminals. A violent anti-Semite, Ley left a "political testament" which attributed Germany's downfall to anti-Semitism and urged Jews and Germans to reach a "complete reconciliation."

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